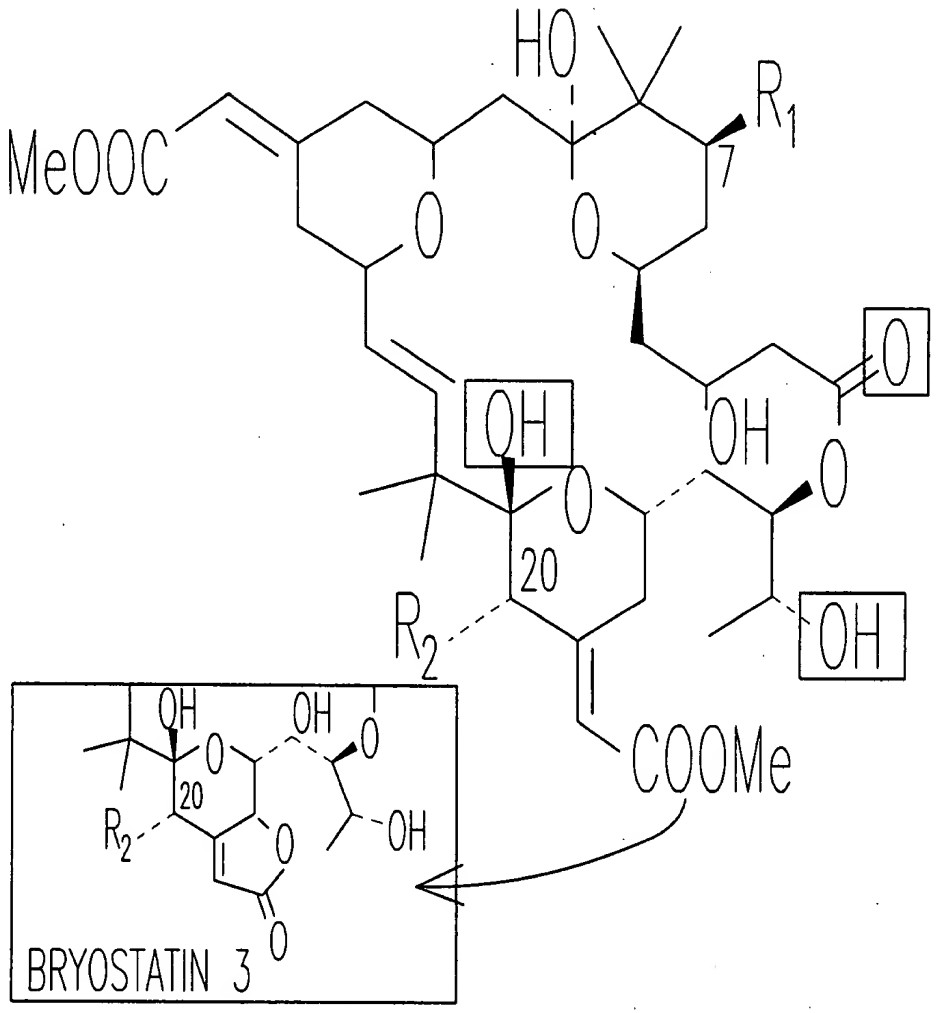


BRYOSTATIN SUBSTITUENTS

	R_1	R_2
1	a	b
2	OH	b
12	d	b
15	a	e
4	c	d
5	c	a
6	d	a
7	a	a
8	d	d
9	a	d
10	c	H
11	a	H
13	d	H
14	c	OH
16	c	H
17	c	H
18	c	H

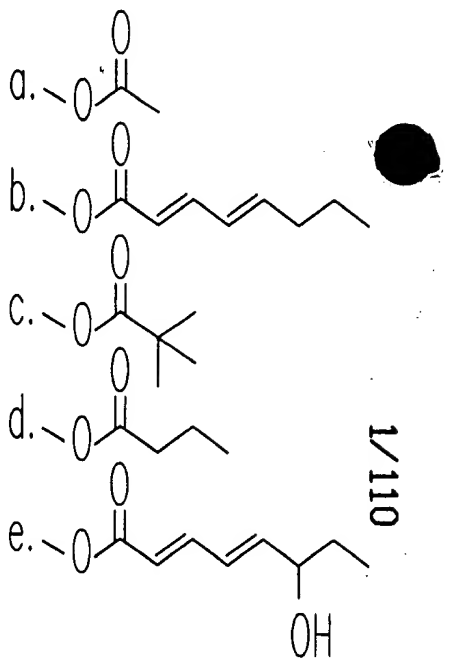


Fig. 1

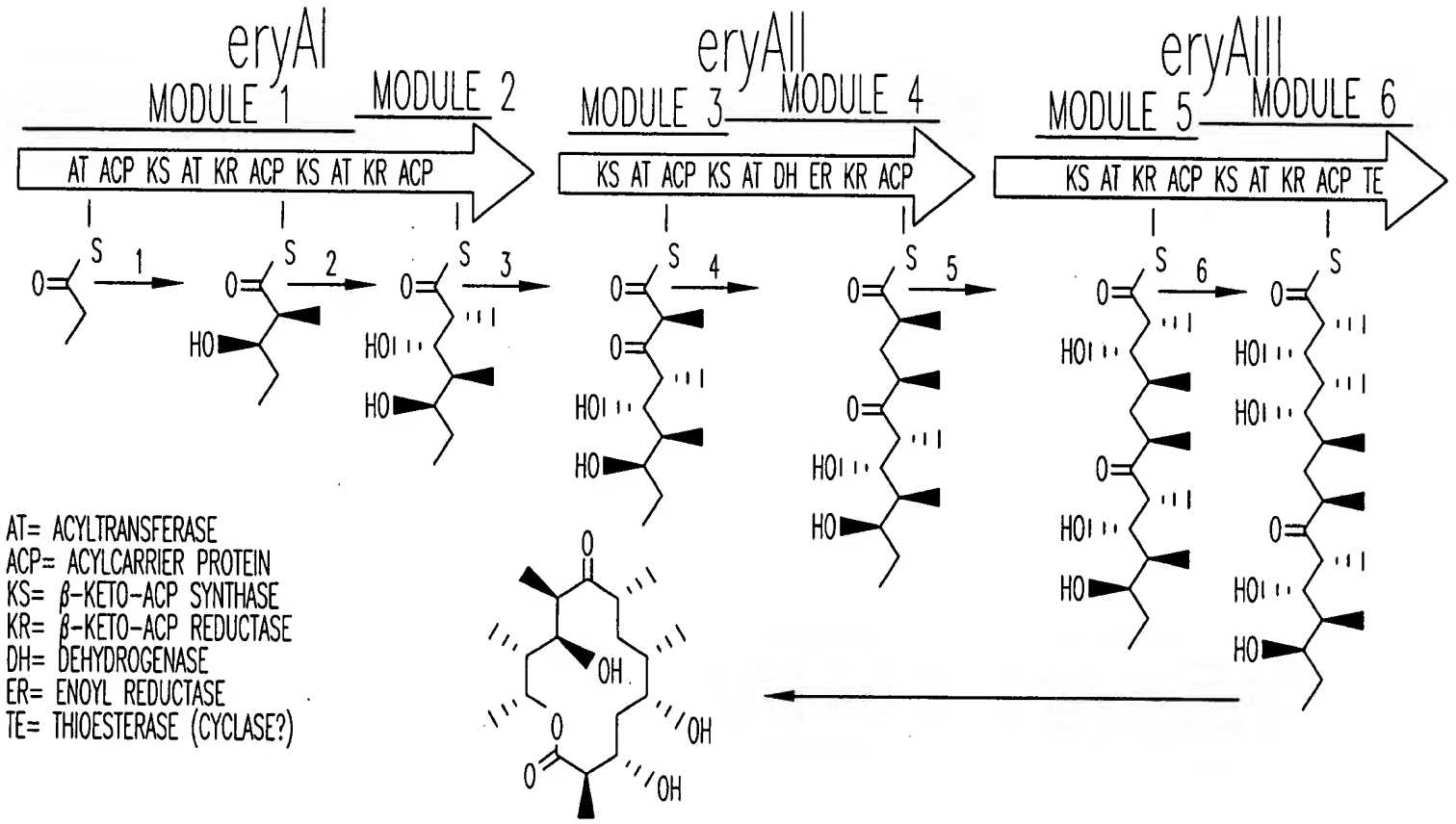

eryAI
eryAII
eryAIII
MODULE 1
MODULE 2
MODULE 3
MODULE 4
MODULE 5
MODULE 6
AT ACP KS AT KR ACP KS AT KR ACP
KS AT ACP KS AT DH ER KR ACP
KS AT KR ACP KS AT KR ACP TE
AT= ACYLTRANSFERASE
ACP= ACYLCARRIER PROTEIN
KS= β-KETO-ACP SYNTHASE
KR= β-KETO-ACP REDUCTASE
DH= DEHYDROGENASE
ER= ENOYL REDUCTASE
TE= THIOESTERASE (CYCLASE?)

Fig.2

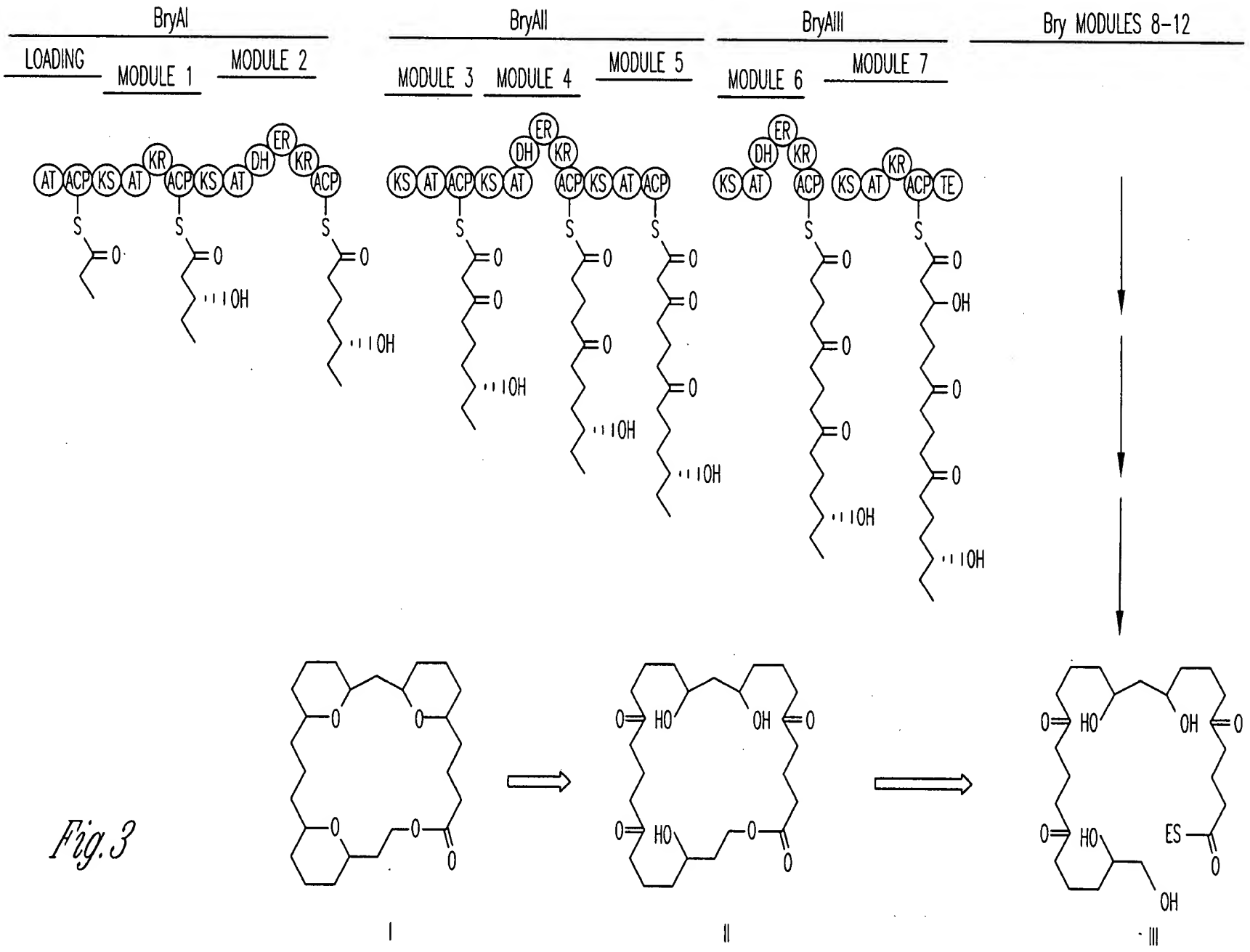

BryAI
LOADING
MODULE 1
MODULE 2
BryAII
MODULE 3
MODULE 4
MODULE 5
BryAIII
MODULE 6
MODULE 7
Bry MODULES 8-12
AT ACP KS AT KR ACP KS AT DH ER KR ACP
KS AT ACP KS AT DH ER KR ACP KS AT ACP
KS AT ACP KS AT DH ER KR ACP KS AT KR ACP TE
HO
OH
ES
I
II
III

Fig. 3

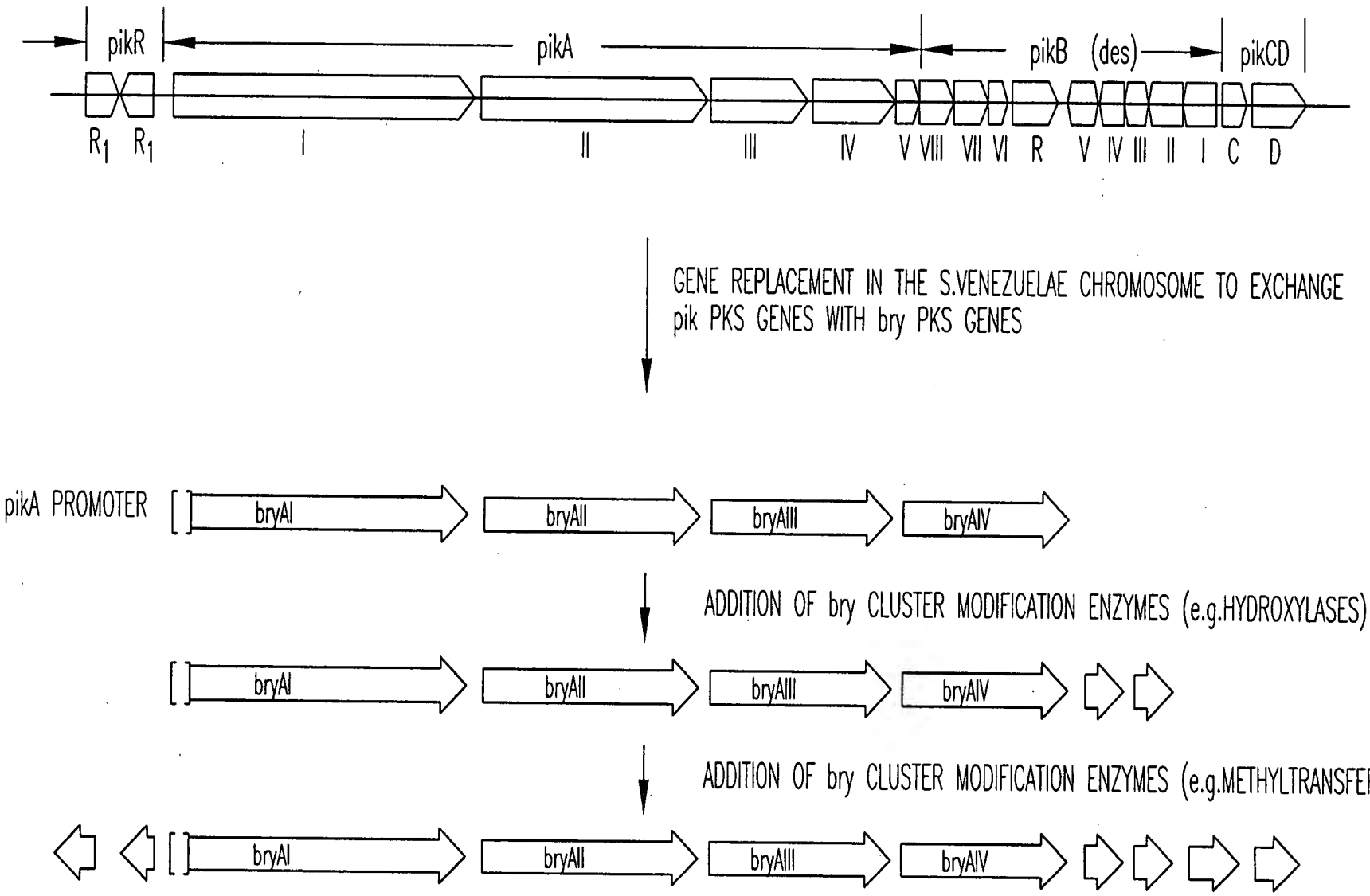

pikR
pikA
pikB (des)
pikCD
R1 R1
I
II
III
IV
V VIII VII VI R V IV III II I C D
GENE REPLACEMENT IN THE S.VENEZUELAE CHROMOSOME TO EXCHANGE pik PKS GENES WITH bry PKS GENES
pikA PROMOTER
bryAI
bryAII
bryAIII
bryAIV
ADDITION OF bry CLUSTER MODIFICATION ENZYMES (e.g.HYDROXYLASES)
ADDITION OF bry CLUSTER MODIFICATION ENZYMES (e.g.METHYLTRANSFERASES)

Fig. 4

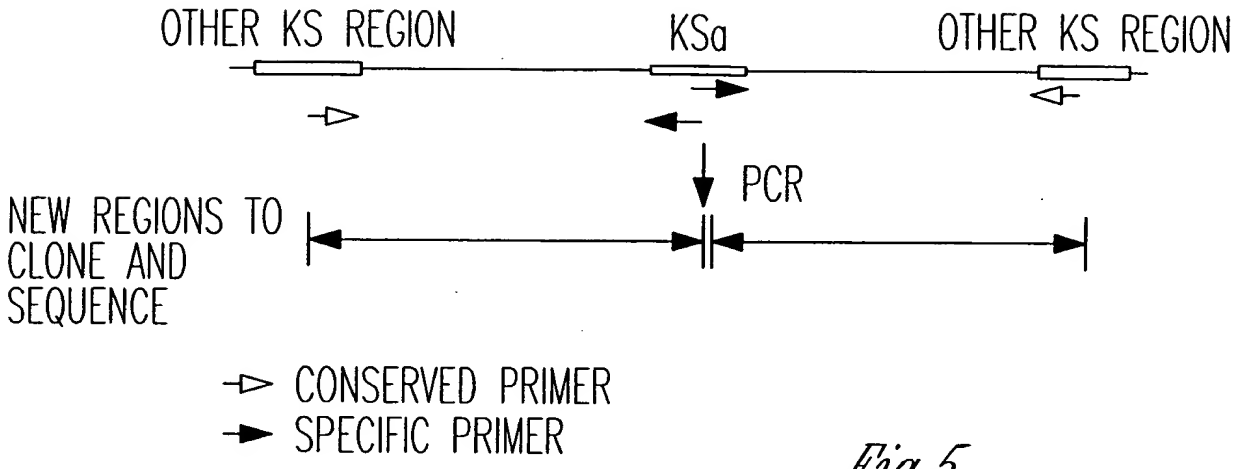


Fig. 5

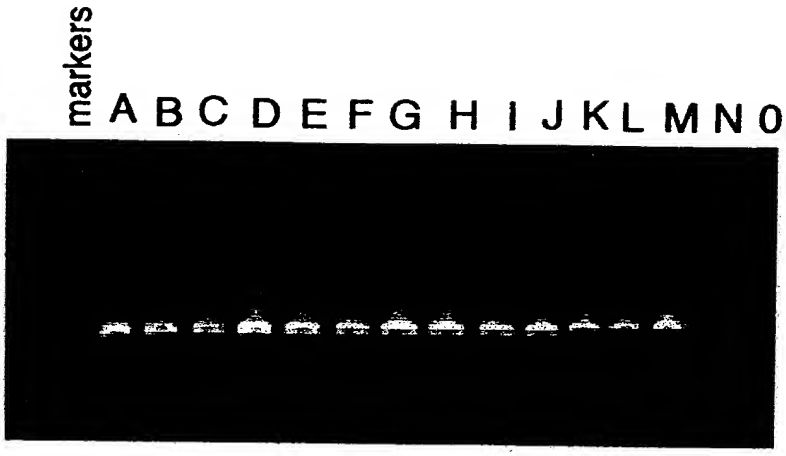

markers
A B C D E F G H I J K L M N O

FIG. 6

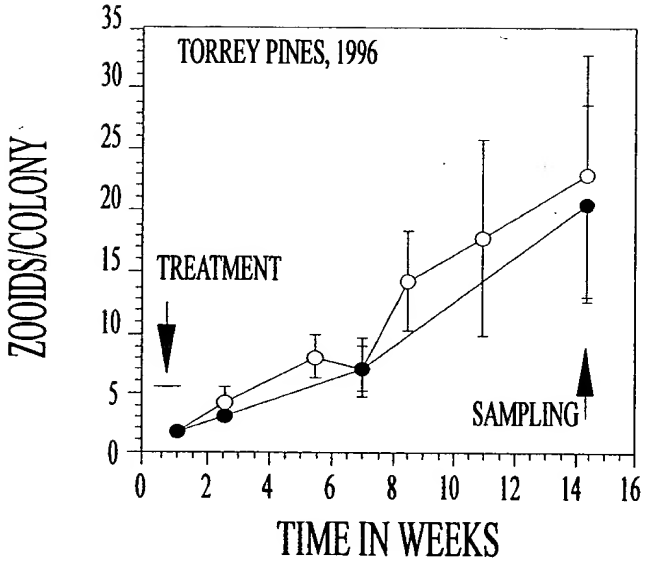

TORREY PINES, 1996
ZOOIDS/COLONY
TREATMENT
SAMPLING
TIME IN WEEKS
0
5
10
15
20
25
30
35
0
2
4
6
8
10
12
14
16

FIG. 7A

DGGE

FIG. 7B

KSa Amplification

FIG. 7C

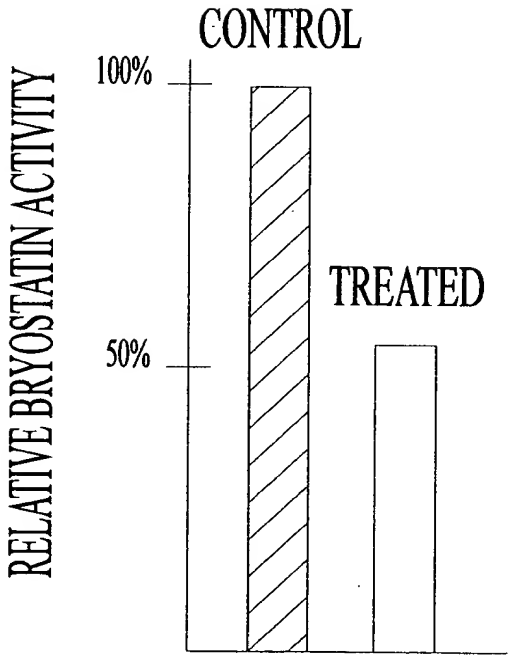


FIG. 7D

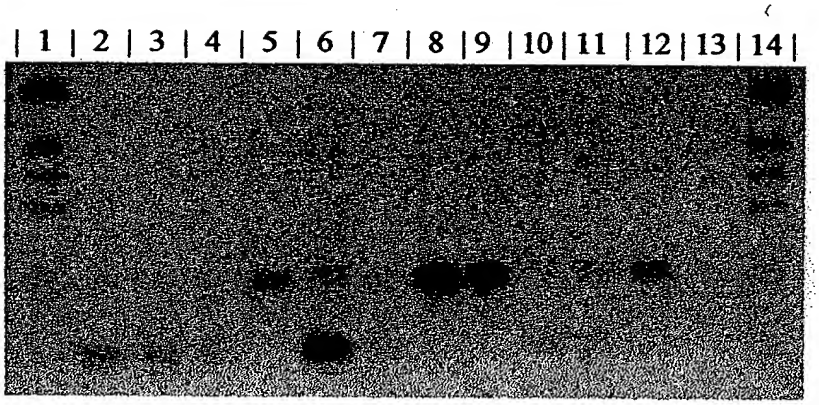


FIG. 8

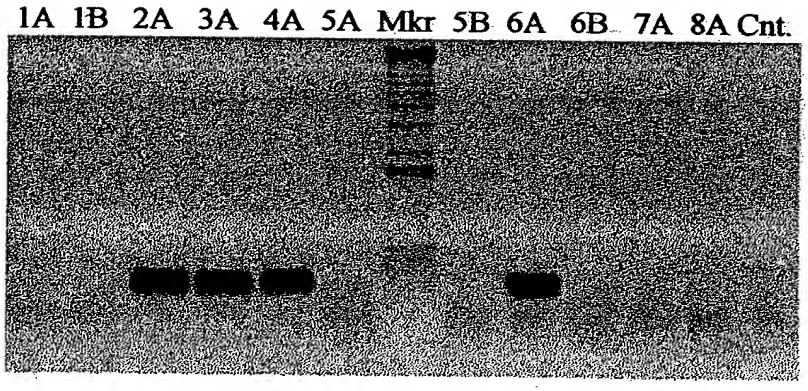


FIG. 9

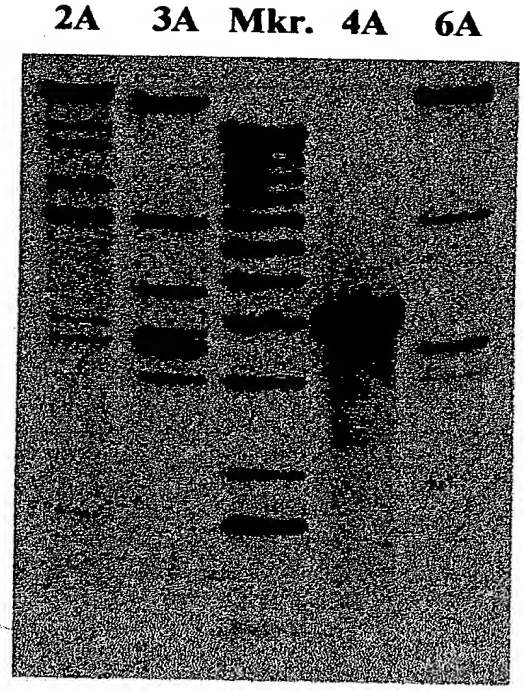


FIG. 10

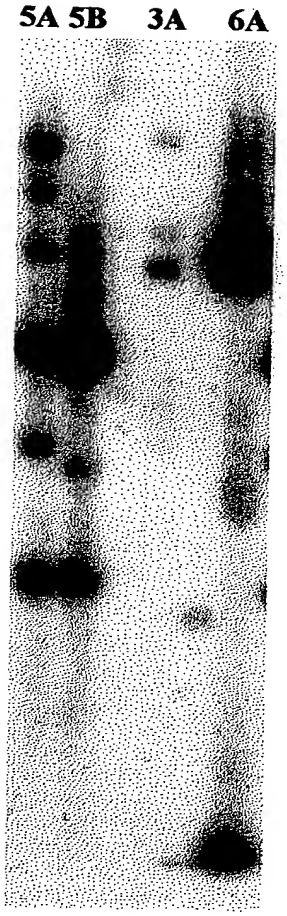


FIG. 11

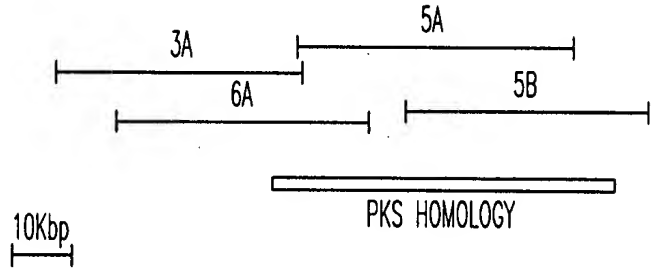

3A
5A
6A
5B
PKS HOMOLOGY
10Kbp

Fig. 12

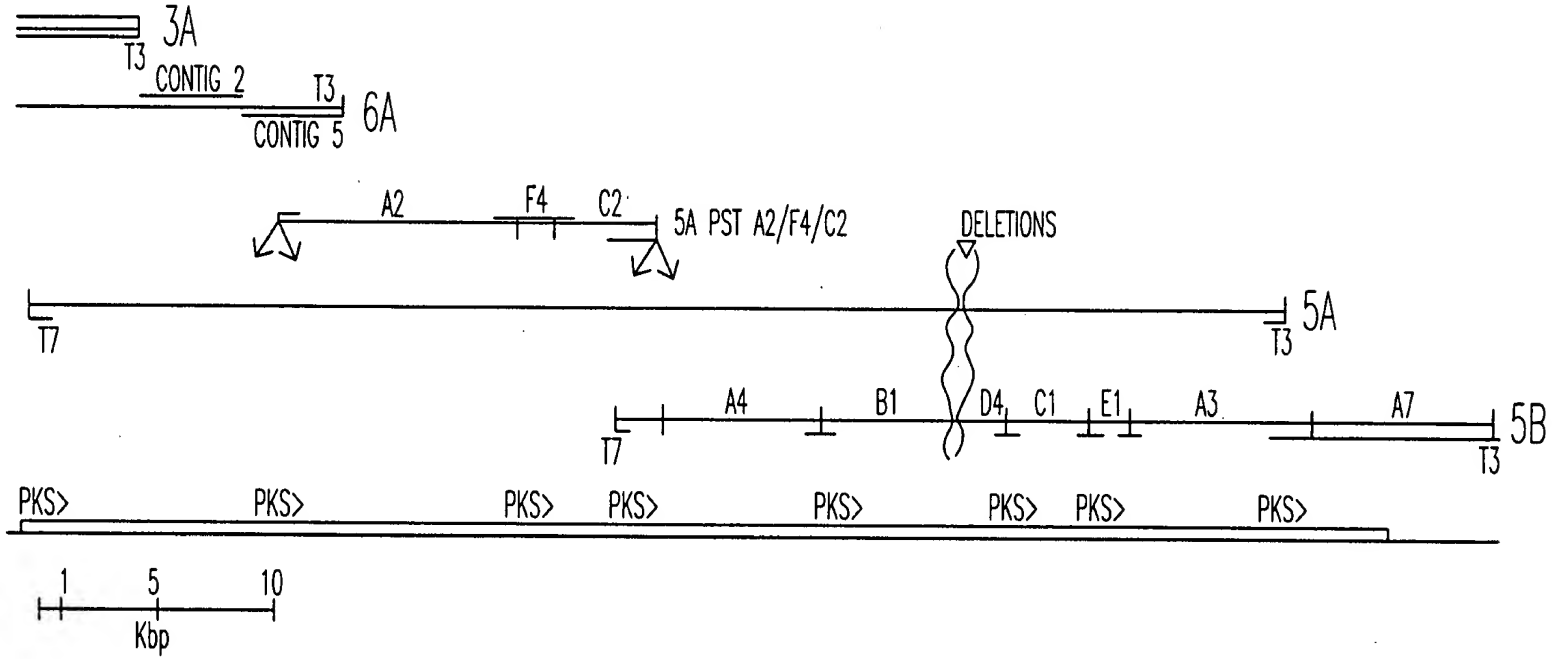

3A
T3
CONTIG 2
T3
CONTIG 5
6A
A2
F4
C2
5A PST A2/F4/C2
DELETIONS
T7
T3
5A
A4
B1
D4
C1
E1
A3
A7
T7
T3
5B
PKS>
PKS>
PKS>
PKS>
PKS>
PKS>
PKS>
PKS>
1
5
10
Kbp

Fig. 13

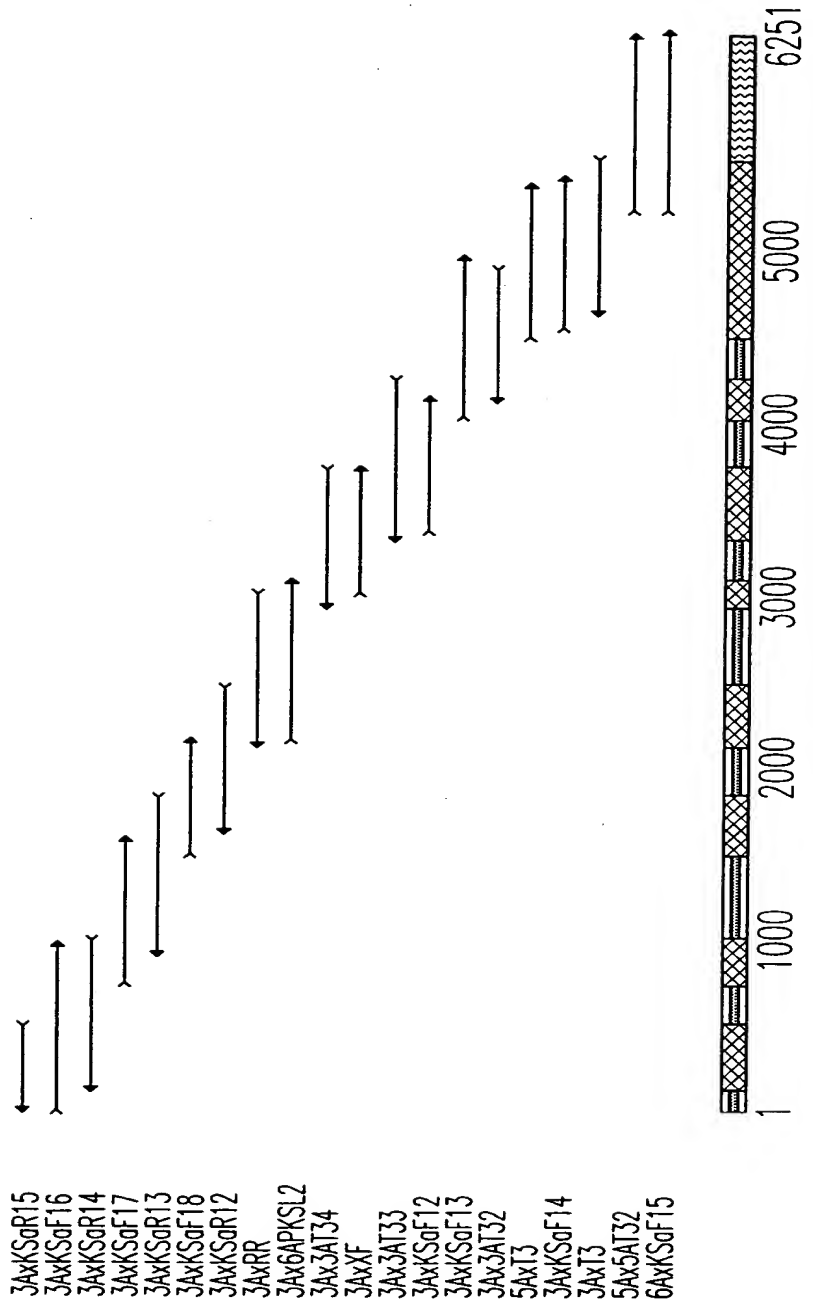


Fig. 14A

Nucleotide and Translated Amino Acid Sequence of PKS Cluster on Clone 3A

```
  1  GAT GGA ACT CAT TAC CAC CCA CAA AAA AGT CCG TTT CTT CAA 42

 43  CGC GGT TGA TTT AAT TAA CCA GCT AAT CAA CGA ACA ACA AAA 84

 85  GCA GCA AAC GGG CAA ACT CAT CAG AGC CTT ATT GCA GGT GGA 126

127  TTG TTT AAG TAT TGA TGA ACT CGG TTA TAT CCC ATT CCC TAA 168

169  ATC CGG TGG GGC GTT GCT CTT CCA CCT CAT CAG TAA ACG GTA 210

211  TGA GAA GAC CAG TAT TAT CAT CAG CAC CAA TCT GGC TTT TGG 252

253  GGA ATG GAA CAG TGT GTT TGG TGA TGC CAA GAT GAC CAC CGC 294

295  GTT ATT GGA TCG TAT CAC GCA TCA TTG TTC AAT CAT CGA AAC 336

337  CAA GCA TGC GTC GTA TCG TTT TAA GCA GAG TCA GAA ACA GAC 378
```

FIG 14B

```
379  ATG AAA GTA GCT TTC ACC GGT GGG ACA GTG TTA GAT GCA AAC 420
                <<<TRANSPOSASE ORF

421  CCC GGG TCA GCT TTA AGT GCA ATT TGA AAA CCA ATG TGA TAA 462
Possible transcription control sequences>      -35              -10

463  TTG TGG CTA AGA TCA ATA AAA ATA AAA TTT TTT TAT TGA TTA 504
Inverted repeat>            |------------>      <------------|

505  TGA TGA TCC ACG TTA AAA AAA ATA CTA TAA ATA TGA AAT AAT 546

547  ATT TCA ACT TTA TTT TTG ATG GTC GTT GTT GAG GAA TTT TTT 588
                                          Possible SD sequence
PKS ORF START>>>                    M   V   V   V   E   E   F   F

589  GTG AGT TAT CGA GAT ATT TTG AAG GCT TTA CAG GAT GAA AAA 630
      V   S   Y   R   D   I   L   K   A   L   Q   D   E   K

631  ATT AGT TTT GAA GAG GCT AAA TAT AAG TTA ATA AAA AGA AAA 672
      I   S   F   E   E   A   K   Y   K   L   I   K   R   K

673  GAT AAA AAA TCA AAA CAG CGT TTA AAT CAT GAT CGT GAA TTA 714
      D   K   K   S   K   Q   R   L   N   H   D   R   E   L
```

FIG 14B (cont'd)

```
715  AAT CGA TCG ATG AAT ATT ACG CCA AAA ATA GTG AAT AAT TAC 756
       N   R   S   M   N   I   T   P   K   I   V   N   N   Y

757  GGT TTA GTA TTA TTG GGC GGT CAT TTA TTT GAA GAA CTC CGT 798
       G   L   V   L   L   G   G   H   L   F   E   E   L   R

799  CTG AGT GAA TGG AAA GCT GCC AAC CCT AAC CCT AAT GAA GTT 840
       L   S   E   W   K   A   A   N   P   N   P   N   E   V

841  AGC ATT CAG GTC AAG GCA TCC GCC ATT AGT TTT ACC GAT ACC 882
       S   I   Q   V   K   A   S   A   I   S   F   T   D   T

883  TTG TGT GTA CAA GGT TTA TAT CCA TCA CAC TAT CCC TTT GTT 924
       L   C   V   Q   G   L   Y   P   S   H   Y   P   F   V

925  CCG GGC TTT GAA GTA TCG GGA GTG ATT CGT CAA GTG GGT GAA 966
       P   G   F   E   V   S   G   V   I   R   Q   V   G   E

967  CAC ATA ACC GAC TTA CAC GTG GGT GAT GAA GTT ATT GCG TTC 1008
       H   I   T   D   L   H   V   G   D   E   V   I   A   F

1009 ACA GGA TCA TCA ATG GGA GGG CAT GCT GCC TAT GTG ACG GTG 1050
       T   G   S   S   M   G   G   H   A   A   Y   V   T   V

1051 CCA CAA GAT TAC GTG GTA CGA AAA CCC AAG GAC TTA TCT TTT 1092
       P   Q   D   Y   V   V   R   K   P   K   D   L   S   F
```

FIG 14B (cont'd)

```
1093  GAG GAT GCC TGT AGC TTC CCA TTG GCT TTT GCG ACC GTC TAT 1134
        E   D   A   C   S   F   P   L   A   F   A   T   V   Y

1135  CAC AGT TTT GCA CGG GGA AAA TTA TCT CAC AAC GAT CAT ATC 1176
        H   S   F   A   R   G   K   L   S   H   N   D   H   I

1177  TTG ATA CAA ACG GCG ACA GGT GGC TGT GGT TTG ATG GCA CTT 1218
        L   I   Q   T   A   T   G   G   C   G   L   M   A   L

1219  CAG TTG GCG CGT TTA AAG CAG TGT GTG TGT TAT GGG ACC TCC 1260
        Q   L   A   R   L   K   Q   C   V   C   Y   G   T   S

1261  AGC CGA GAA GAC AAG CTT GCA CTC CTC AAA CAG TGG GCA CTG 1302
        S   R   E   D   K   L   A   L   L   K   Q   W   A   L

1303  CCC TAC GTC TTC AAT TAT AAG ACG TGC AAT ATT GAT GAG GAG 1344
        P   Y   V   F   N   Y   K   T   C   N   I   D   E   E

1345  ATT CAA CGC GTC AGT GGT CAT CGA GGT GTC GAT GTC GTC TTA 1386
        I   Q   R   V   S   G   H   R   G   V   D   V   V   L

1387  AAT ATG CTC CCA GGA GAG CAT ATA CAA CAA GGG CTG AAT AGT 1428
        N   M   L   P   G   E   H   I   Q   Q   G   L   N   S

1429  TTA GCC AAG GGA GGC CGT TAT TTG GAA CTG TCG ATG CAT GGA 1470
        L   A   K   G   G   R   Y   L   E   L   S   M   H   G
```


FIG 14B (cont'd)

```
1471  TTG TTA ACG AAC GAA CCT GTC AGT CTG TCG TCT CTG CGT TTT 1512
        L   L   T   N   E   P   V   S   L   S   S   L   R   F

1513  AAT CAA TCC GTT CAA ACC ATC AAT TTA CTG GGG TTA CTC AAT 1554
        N   Q   S   V   Q   T   I   N   L   L   G   L   L   N

1555  AAG GGT GAT GAT GGC TTT ATC GGG TCT GTA TTA GCG CAA ATG 1596
        K   G   D   D   G   F   I   F   S   V   L   A   Q   M

1597  GTT TCC TGG ATT GAA TCA GGT GAT TTA GTG TCA ACC GTG TCG 1638
        V   S   W   I   E   S   G   D   L   V   S   T   V   S

1639  CGT ATT TAT CCG TTG GAT CAG ATC GGT GAA GCG TTA CGT TAT 1680
        R   I   Y   P   L   D   Q   I   G   E   A   L   R   Y

1681  GTC TCT GAA GGG GAG CAT ATA GGT AAA GTC GTT GTG AGT CAT 1722
        V   S   E   G   E   H   I   G   K   V   V   V   S   H

1723  ACA GCG ACA GAG CCG ATG GAT TGC AGA CAG CGC TGT ATT GAC 1764
        T   A   T   E   P   M   D   C   R   Q   R   C   I   D

1765  AAT GTA TTG AAG CAA GGG CAA ATG GCG GCC TTG ACC GCG ACA 1806
        N   V   L   K   Q   G   Q   M   A   A   L   T   A   T

1807  GGG GGA AAA AGC CGG GTG TGG GGT GGT ACT GGT GTC AAT GAC 1848
        G   G   K   S   R   V   W   G   G   T   G   V   N   D
```

FIG 14B (cont'd)

```
1849  AAA CCG TCT CCT GCT GTT GGT ATA GAG GAG CGT TTA TTG GAA 1890
        K   P   S   P   A   V   G   I   E   E   R   L   L   E

1891  GGG ATA GCG GTG ATT GGT CTG TCA GGC CAG TAT CCG AAG TCG 1932
        G   I   A   V   I   G   L   S   G   Q   Y   P   K   S

1933  AAG ACA CTG GAG CAA TTT TGG CAG ACC CTA GCG GAT GGA GTG 1974
        K   T   L   E   Q   F   W   Q   T   L   A   D   G   V

1975  GAT TGC ATC TCA GAG ATT CCT GCT GAT CGC TGG TCG TTA GAA 2016
        D   C   I   S   E   I   P   A   D   R   W   S   L   E

2017  GAG TAT TAC TCG CCA ATA CCG GAA GGG GGT AAA ACG TAT TGT 2058
        E   Y   Y   S   P   I   P   E   G   G   K   T   Y   C

2059  AAG TGG ATG GGT GTT TTG GAG GAC ATG GAT TGT TTT GAT CCG 2100
        K   W   M   G   V   L   E   D   M   D   C   F   D   P

2101  TTG TTT TTT GCG ATA TCT CCT CGG GAA GCG GAA GTG ATG GAC 2142
        L   F   F   A   I   S   P   R   E   A   E   V   M   D

2143  CCA CAG CAA CGG TTA TTT TTA GAG AAT GCA TGG AGT TGT ATA 2184
        P   Q   Q   R   L   F   L   E   N   A   W   S   C   I

2185  GAG GAT GCG GGG ATT AAC CCT AAG ATG TTA TCC CGT AGT CGA 2226
        E   D   A   G   I   N   P   K   M   L   S   R   S   R
```

FIG 14B (cont'd)

```
2227  TGT GGG GTA TTT GTT GGG TGC GGT GCG AAT GAT TAC AGC GCT 2268
        C   G   V   F   V   G   C   G   A   N   D   Y   S   A

2269  CTA ATG AAC AGT AGC CAC TCA ACG AGT CTC GAA TTA ATG AAG 2310
        L   M   N   S   S   H   S   T   S   L   E   L   M   K

2311  GAA TTA GGC AAC AAC TCT TCC ATT TTA TCT GCA CGA ATC TCC 2352
        E   L   G   N   N   S   S   I   L   S   A   R   I   S

2353  TAC TTT TTA AAT TTA AAG GGC CCT TGT CTT GCG ATT GAT ACC 2394
        Y   F   L   N   L   K   G   P   C   L   A   I   D   T

2395  GCA TGT TCT TCT TCA TTA GTG GCC ATT GCC GAG TCG TGT AAT 2436
        A   C   S   S   S   L   V   A   I   A   E   S   C   N

2437  AGT CTG GTG TTG GGT ACT AGT GAC TTG GCG TTG GCA GGT GGA 2478
        S   L   V   L   G   T   S   D   L   A   L   A   G   G

2479  GTG TTG CTG ATG CCA GGT CCA TCC TTA CAT ATA GGT TTG AGT 2520
        V   L   L   M   P   G   P   S   L   H   I   G   L   S

2521  CAT GGA GAA ATG TTA TCA GTA GAT GGT CGC TGC TTT ACC TTT 2562
        H   G   E   M   L   S   V   D   G   R   C   F   T   F

2563  GAC CAA CGG GCC AAC GGT TTT GTA CCT GGA GAG GGT GTC GGC 2604
        D   Q   R   A   N   G   F   V   P   G   E   G   V   G
```

FIG 14B (cont'd)

```
2605  GTT GTC TTG TTA AAA CGC ATG TCG GAT GCG GTG CGT GAT GGT 2646
        V   V   L   L   K   R   M   S   D   A   V   R   D   G

2647  GAT CCC ATT CGT GCA GTG ATA CGG GGC TGG GGT GTG AAT CAG 2688
        D   P   I   R   A   V   I   R   G   W   G   V   N   Q

2689  GAT GGT AGA AGT AAT GGT ATT ACG GCG CCG AGT TCA AAA GCG 2730
        D   G   R   S   N   G   I   T   A   P   S   S   K   A

2731  CAA AGT GCT CTG GAG CAA GAG GTT TAT CAA CGT TTT AAT ATT 2772
        Q   S   A   L   E   Q   E   V   Y   Q   R   F   N   I

2773  GAT CCA TCG AGC ATT ACC TTA GTC GAA GCA CAC GGA ACG GGC 2814
        D   P   S   S   I   T   L   V   E   A   H   G   T   G

2815  ACC AAA TTG GGT GAT CCG ATA GAA GTC GAG GCA TTG GCA GAA 2856
        T   K   L   G   D   P   I   E   V   E   A   L   A   E

2857  TCG TTT CGA GTC TAT ACG GAC AAG CGT CAT TAC TGT GCT CTG 2898
        S   F   R   V   Y   T   D   K   R   H   Y   C   A   L

2899  GGG TCG GTA AAA AGT AAT ATT GGT CAT TTG GGG GTA GGT GCT 2940
        G   S   V   K   S   N   I   G   H   L   G   V   G   A

2941  GGG ATA GCG GGC GTG ACC AAA GTA TTG TTA TCT TTG CAG CAT 2982
        G   I   A   G   V   T   K   V   L   L   S   L   Q   H
```

FIG 14B (cont'd)

```
2983  CGC ATG TTA CCA CCG ACG ATT CAT TGT GAG GAT GTA AAC CCA 3024
        R   M   L   P   P   T   I   H   C   E   D   V   N   P

3025  CAG ATT GCG TTG GAA GGT AGC CCC TTT TAT ATC AAT ACG GAA 3066
        Q   I   A   L   E   G   S   P   F   Y   I   N   T   E

3067  TTA AAG CCT TGG CAG TCT GGT GAC AGT ATA CCA CGA CGG GCT 3108
        L   K   P   W   Q   S   G   D   S   I   P   R   R   A

3109  GGT GTC AGT TCT TTT GGA TTT AGT GGT ACC AAT GCA CAT CTT 3150
        G   V   S   S   F   G   F   S   G   T   N   A   H   L

3151  GTA TTG GAG GAA TAT CTT CCT CAC TCG ACA GGA ACA ATA GAG 3192
        V   L   E   E   Y   L   P   H   S   T   G   T   I   E

3193  TCG TTT GCT GCG AAT CAT GCA AGT ACA GTT ATT ATT CCT TTG 3234
        S   F   A   A   N   H   A   S   T   V   I   I   P   L

3235  TCA GCG AAA AGT CAT AAT AGT TTA TAC ACA TAT GCT CAA ACG 3276
        S   A   K   S   H   N   S   L   Y   T   Y   A   Q   T

3277  CTA TTG ATA TTT TTA AAA CGT AGT CAG GTT ACT GAC GCT AAA 3318
        L   L   I   F   L   K   R   S   Q   V   T   D   A   K

3319  AAA ATC ACA ATA GAT CAC ATG GAA TGT CGC TTG TTG GAT TTA 3360
        K   I   T   I   D   H   M   E   C   R   L   L   D   L
```

FIG 14B (cont'd)

```
3361  GCC TAT ACT TTG CAA GTG GGT CGC GAG GCA ATG GAC AAA CGG 3402
        A   Y   T   L   Q   V   G   R   E   A   M   D   K   R

3403  ATA AGT TTT ATT GTC AAC ACA AAG CAA GCA CTC GTG GAA AAG 3444
        I   S   F   I   V   N   T   K   Q   A   L   V   E   K

3445  CTA AAT GCT TTT CTA GAG AAG GAA AAG ACT ATA ACA GAC TGT 3486
        L   N   A   F   L   E   K   E   K   T   I   T   D   C

3487  TAC CAC TAT TTA TTT GAT AGT GAC AAA CCG TCT ACA GAA ATT 3528
        Y   H   Y   L   F   D   S   D   K   P   S   T   E   I

3529  TTC CGT TTA GAC GAA GAT GAC AAA GTA TTA ATA AAC AGC TGG 3570
        F   R   L   D   E   D   D   K   V   L   I   N   S   W

3571  ATA AGT CAA AGT CAA TAT CAC AAA TTA GCC GAA GCC TGG AGC 3612
        I   S   Q   S   Q   Y   H   K   L   A   E   A   W   S

3613  CAA GGA CTC GAT ATC GAC TGG ACG CTA CTC TAT ACC CAC TCA 3654
        Q   G   L   D   I   D   W   T   L   L   Y   T   H   S

3655  TCA ACC CCT CGT CGC ATT AGC CTG CCC ACG TAT CCC TTT GCC 3696
        S   T   P   R   R   I   S   L   P   T   Y   P   F   A

3697  AGA GAC CGC TAC TGG CTA CCA GAA AAA CCA CGC TAT AAC GCG 3738
        R   D   R   Y   W   L   P   E   K   P   R   Y   N   A
```

FIG 14B (cont'd)

```
3739  GCT AAT CAT CCG GTA TCC AAC CAT CAA ACA ACC ACT CAG AAT 3780
        A   N   H   P   V   S   N   H   Q   T   T   T   Q   N

3781  CAC TCA CGC TTT GCC ATT GAT ACG GAT CAC GAT GTC GTT GCC 3822
        H   S   R   F   A   I   D   T   D   H   D   V   V   A

3823  GAG ATC ATG CAA AAG ACA CAT CAA CAG GAA CTG GAA CAA TGG 3864
        E   I   M   Q   K   T   H   Q   Q   E   L   E   Q   W

3865  TTA TTA AAA CTG TTG TTT GTG CAA TTG CAA CAT ATG GGA TTA 3906
        L   L   K   L   L   F   V   Q   L   Q   H   M   G   L

3907  TTT CAA CAT CGT GTC TTT GAG ACA GCG ACC GCT CTA CGT CAA 3948
        F   Q   H   R   V   F   E   T   A   T   A   L   R   Q

3949  AGT GCA GGC ATC GTT GAT AAA TAT GAT CGC TGG TGG CAT GAG 3990
        S   A   G   I   V   D   K   Y   D   R   W   W   H   E

3991  TGT TTA AGC GTT TTA CAG GAT GCG GGT TAT CTT GAA TGG AAA 4032
        C   L   S   V   L   Q   D   A   G   Y   L   E   W   K

4033  GAC GAT AGC GTA GCC GCC GCA CAG GCA TTG GAG TCT GAA TCG 4074
        D   D   S   V   A   A   A   Q   A   L   E   S   E   S

4075  CAA GAG GCA TGG TGG AGC CGA TGG AAC ACG GAG TAT AAG CAT 4116
        Q   E   A   W   W   S   R   W   N   T   E   Y   K   H
```

FIG 14B (cont'd)

```
4117  TAC CAG AAT GAT CCG GAA AAA AAG ACG TTA GCG ATA TTG ATT 4158
        Y   Q   N   D   P   E   K   K   T   L   A   I   L   I

4159  AAC GAT TGC TTA CAG GCA TTA CCA GGG GTG TTA AGT GGT GAG 4200
        N   D   C   L   Q   A   L   P   G   V   L   S   G   E

4201  CAA TTA ATA ACG GAT ATT ATT TTC CCC AAT GGT TCG ATG GAG 4242
        Q   L   I   T   D   I   I   F   P   N   G   S   M   E

4243  AAA ATG GAA GGC TTA TAT AAA AAT AAT AGG ATT GCA GAT TAT 4284
        K   M   E   G   L   Y   K   N   N   R   I   A   D   Y

4285  TGT AAT CAG TGT GTT GGA GAC CTG CTC GTC CAG TTT ATT GAA 4326
        C   N   Q   C   V   G   D   L   L   V   Q   F   I   E

4327  GCA CGT CTG TCA AGA GAT GCC AAT GCG AGG ATA CGG ATT ATC 4368
        A   R   L   S   R   D   A   N   A   R   I   R   I   I

4369  GAA ATT GGG GCC GGT ACG GGG GGC ACC ACC GCG ATA GTG CTG 4410
        E   I   G   A   G   T   G   G   T   T   A   I   V   L

4411  CCA ATG TTA CAA GCC TAT CAG GAT CAT ATC GAT ACG TAT TGT 4452
        P   M   L   Q   A   Y   Q   D   H   I   D   T   Y   C

4453  TAT ACG GAT GTT TCC AAA GCC TTT TTG ATG CAT GGA CAG GAA 4494
        Y   T   D   V   S   K   A   F   L   M   H   G   Q   E
```

FIG 14B (cont'd)

```
4495  CAC TAC GGC GAA CAA TAC CCC TAT CTG AGT TAT TGC CTC TGT 4536
        H   Y   G   E   Q   Y   P   Y   L   S   Y   C   L   C

4537  AAT ATT GAA CAG GAC TTA GTG GCT CAA GGA ATC AGC GTT GGT 4578
        N   I   E   Q   D   L   V   A   Q   G   I   S   V   G

4579  GAT TAT GAT ATT GCG ATC GCA GCC AAT GTA TTA CAT GCC ACG 4620
        D   Y   D   I   A   I   A   A   N   V   L   H   A   T

4621  CGG AAT ATA CAC GAA ACG GTC AGC CAT GTG AGG CAG GCA TTG 4662
        R   N   I   H   E   T   V   S   H   V   R   Q   A   L

4663  GCG GCC AAC GGT TTA TTG ATT TTA AAT GAG TTT AGC CAA AAA 4704
        A   A   N   G   L   L   I   L   N   E   F   S   Q   K

4705  AGC GTT TTT TCG AGT GTG ATA TTT GGT TTG ATC GAT GGT TGG 4746
        S   V   F   S   S   V   I   F   G   L   I   D   G   W

4747  GCC TTA TCT GAA GAT ACG GGA TTG CGT ATT CCT GGA AGC CCA 4788
        A   L   S   E   D   T   G   L   R   I   P   G   S   P

4789  GGG TTA TAT CCT AAG CAG TGG CAA GCG GTA CTG GAG GCG TCG 4830
        G   L   Y   P   K   Q   W   Q   A   V   L   E   A   S

4831  GGT TTT GGT GAC GTG GAA TTT CCG CTC CAT GAC GCT CGT GAG 4872
        G   F   G   D   V   E   F   P   L   H   D   A   R   E
```


FIG 14B (cont'd)

```
4873  TTG GGT CAA CAA ATC ATC CTG GCA ACC AAC GCC CAT GCG AAC 4914
        L   G   Q   Q   I   I   L   A   T   N   A   H   A   N

4915  GTT GCT AGC GAT CTT GCG ACA TCG GTG ATT GAT CAT GCC CCC 4956
        V   A   S   D   L   A   T   S   V   I   D   H   A   P

4957  AAG AGA TTG CCA TCC GCC GAG GTC AGC ATG GAT GAG AGA GTG 4998
        K   R   L   P   S   A   E   V   S   M   D   E   R   V

4999  AGC CAT GAT GCC ATG ATG AAG GCA TCG GTC AAA CAG TTG TTG 5040
        S   H   D   A   M   M   K   A   S   V   K   Q   L   L

5041  GTA GAG CAA TTA TCC CAG TCT TTA AAA CTG GAT ATG AAT GAG 5082
        V   E   Q   L   S   Q   S   L   K   L   D   M   N   E

5083  ATT CAC CCT GAC GAA TCC TTT GCC GAT TAT GGT GTT GAT TCC 5124
        I   H   P   D   E   S   F   A   D   Y   G   V   L   S

5125  ATT ACC GGT GCT AGT TTT ATT CAA CAG CTT AAT GAC ACG CTG 5166
        I   T   G   A   S   F   I   Q   Q   L   N   D   T   L

5167  ACA CTG ACT TTA AAG ACG GTG TGT TTG TTT GAT CAC AGC TCG 5208
        T   L   T   L   K   T   V   C   L   F   D   H   S   S

5209  GTA AAC CGA CTG ACG GCC TAT CTG TTA TCT GAC TAT GGT GAT 5250
        V   N   R   L   T   A   Y   L   L   S   D   Y   G   D
```

FIG 14B (cont'd)

```
5251  GAT ATC GCG CAG TGG TTA GCA ACG GCA CCA GCG TTG GTT GAT 5292
        D   I   A   Q   W   L   A   T   A   P   A   L   V   D

5293  CAT CCA CAG AGT GTC GTC AGT CAG GTG TTG CCT GAA AGG TCG 5334
        H   P   Q   S   V   V   S   Q   V   L   P   E   R   S

5335  CCA GCA AGC ACA CAA GCC AAG CCC TTG CCT TCA GTC CCC CCT 5376
        P   A   S   T   Q   A   K   P   L   P   S   V   P   P

5377  TCG TTA TCG ATG GAG TCA CCC GTT CAA CAG GAG TCG ATA GCG 5418
        S   L   S   M   E   S   P   V   Q   Q   E   S   I   A

5419  ATT ATT GGT ATG AGC GGA CGG TTT GCG GCG TCA GAA AAC CTG 5460
        I   I   G   M   S   G   R   F   A   A   S   E   N   L

5461  GAA GCG TTT TGG CAA CAG TTG GCA CAG GGT GTG GAT TTG GTC 5502
        E   A   F   W   Q   Q   L   A   Q   G   V   D   L   V

5503  GAA CCC GCG TCA CGT TGG GGG CCA CAA GCG GAG ACT TAC TAC 5544
        E   P   A   S   R   W   G   P   Q   A   E   T   Y   Y

5545  GGC AGT TTT CTC AAG GAT ATG GAT CAA TTT GAT CCT CTC TTT 5586
        G   S   F   L   K   D   M   D   Q   F   D   P   L   F

5587  TTT AAT CTC TCC GGT GTG GAA GCG AGT TAT ATG GAC CCG CAA 5628
        F   N   L   S   G   V   E   A   S   Y   M   D   P   Q
```

FIG 14B (cont'd)

```
5629   CAA CGT TGT TTT CTG GAG GAA TCC TGG AAT GCA CTG GAG AAT 5670
        Q   R   C   F   L   E   E   S   W   N   A   L   E   N

5671   GCG GGT TAT GTG GGT GAT GGC ATA GAA GGC AAG CGT TGT GGT 5712
        A   G   Y   V   G   D   G   I   E   G   K   R   C   G

5713   ATT TAT GCC GGT TGC GTG TCC GGT GAC TAC GCA CAA CTG TTG 5754
        I   Y   A   G   C   V   S   G   D   Y   A   Q   L   L

5755   GGC GAC CAA CCC CCG CCC CAG GCT TTT TGG GGC AAT GCC AGT 5796
        G   D   Q   P   P   P   Q   A   F   W   G   N   A   S

5797   TCT ATT ATT CCC GCC CGG ATT GCC TAT TAT TTA AAT CTT CAG 5838
        S   I   I   P   A   R   I   A   Y   Y   L   N   L   Q

5839   GGC CCT GCT ACC GCG GTG GAT ACT GCC TGC TCA AGT TCT CTG 5880
        G   P   A   T   A   V   D   T   A   C   S   S   S   L

5881   GTG GCG GTG CAT TTG GCC TGC CAG GCC CTA CAC CTG GAT GAA 5922
        V   A   V   H   L   A   C   Q   A   L   H   L   D   E

5923   ATG GAG ATG GCC TTG GCA GGA GGT GTG TCT CTT TAT CCA ACC 5964
        M   E   M   A   L   A   G   G   V   S   L   Y   P   T

5965   CCC ATC ATT GTA TGA GTC TTT GCG TGG TGC AGA TAT         6000
        P   I   I   V   Z   V   F   A   W   C   R   Y
```

FIG 14B (cont'd)

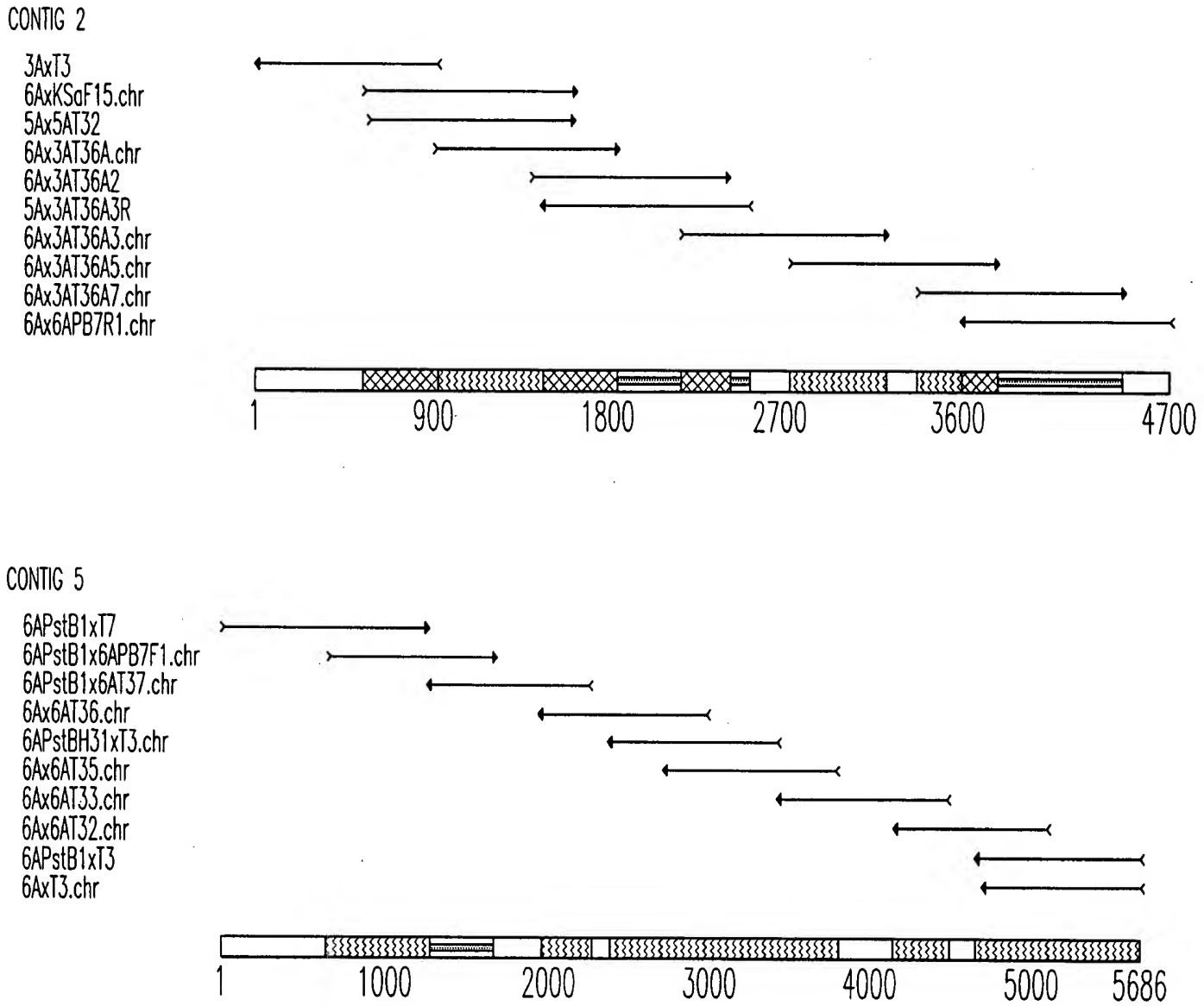

CONTIG 2
3AxT3
6AxKSqF15.chr
5Ax5AT32
6Ax3AT36A.chr
6Ax3AT36A2
5Ax3AT36A3R
6Ax3AT36A3.chr
6Ax3AT36A5.chr
6Ax3AT36A7.chr
6Ax6APB7R1.chr
1
900
1800
2700
3600
4700
CONTIG 5
6APstB1xT7
6APstB1x6APB7F1.chr
6APstB1x6AT37.chr
6Ax6AT36.chr
6APstBH31xT3.chr
6Ax6AT35.chr
6Ax6AT33.chr
6Ax6AT32.chr
6APstB1xT3
6AxT3.chr
1
1000
2000
3000
4000
5000
5686

Fig. 15A

Contig Sequences from Cosmid 6A

Contig 2

ANCAATTTATNACATCCNCGGGAAAANACGAACGGTCACCATNTAGGCAG
GCATTGCGGCCAACGGTTATTTTTTAAATGAGTTAACCAAAAAAGNGTT
TTTGNAGTGTAAATTGGTTTGNCGANGGTTGGCCTTATTTAANANAGGGA
TTGNGTATTCTTGAAACCCAGGGTTATTTCCTAACAGTGCAANCGGTACT
GAGGCGTCGGNTTTGGTTACGTGAATTTCCGCTCCATGACGCTCGTGAGT
TGGGTCAACAAATCATCCTGGCAACCAACGCCCATGCGAACGTTGTAGCG
ATCTTGCGACATCGGTGATTGATCATGCCCCCAAGAGATTGCCATCCGCC
GAGGTCAGCATGGATAAAGAGTAGCCATGATGCCATGATGAAGGCATCGG
TCAAACAGTTGTTGGTAGAGCAATTATCCCAGTCTTTAAAACTGGATATG
AATGAGATTCACCCTGACGAATCCTTTGCCGATTATGGTGTTGATTCCAT
TACCGGTGCTAGTTTTATTCAACAGCTTAATGACACGCTGACACTGAYTT
KRAAGACKKTGTGTTTGCTTGATCACAGCTCGGTAAACCGACTGACGGCC
TATCTGTTATCTGACTATGGTGATGATATCGCGCAGTGGTTAGCAACGGC
ACCAGCGTTGGTTGATCATCCACAGAGTGTCGTCAGTCAGGTGTTGCCTG
AAAGGTCGCCAGCAAGCACACAAGCCAAGCCCTTGCCTTCAGTCCCCCCT
TCGTTATCGATGGAGTCACCCGTTCAACAGGAGTCGATAGCGATTATTGG
TATGAGCGGACGGTTTGCGGCGTCAGAAAACCTGGAAGCGTTTTGGCAAC
AGTTGGCACAGGGTGTGGATTTGGTCGAACCCGCGTCACGTTGGGGGCCA
CAAGCGGAGACTTACTACGGCAGKTTYCTCAAGGATATGGATCAATTTGA
TCCTCTCTTTTTTAATCTCTCCGGTGTGGAAGCGAGTTATATGGACCCGC
AACAACGTTGTTTTCTGGAGGAATCCTGGAATGCACTGGAGAATGCGGGT
TATGTGGGTGATGGCATAGAAGGCAAGCGTTGTGGTATTTATGCCGGTTG
CGTGTCCGGTGACTACGCACAACTGTTGGGCGACCAACCCCCGCCCCAGG
CTTTTTGGGGCAATGCCAGTTCTATTATTCCCGCCCGGATTGCCTATTAT
TTAAATCTTCAGGGCCCTGCTACCGCGGTGGATACTGCCTGCTCAAGTTC
TCTGGTGGCGGTGCATTTGGCCTGCCAGGCCCTACACCTGGATGAAATGG
AGATGGCCTTGGCAGGAGGTGTGTCTCTTTATCCAACCCC:ATCATTGTA
TGAGTCTTTGCGTGGTGCAGATATGCTCTCTTCGAGGGGGCGTTGCCACA
:GCTTTGATGCCTGTGCCSACGGTATCGTCATTKGTGAATGGGTGGGGGK
GGTG:GG:GCTAAAACGCTTGTCGGCGGCATTTGGCCGGATGGC:AATCA
TATTCACGGAGTGATTGCTGGCAGTGGTATCAA:TCAAAACGGTCGTAGT
AAMTGGGAATACGGGCACCCAGTGCMCAAATSCAAAGAACGCTTGGWAAC
GTTGGGTT:TATGATCGCTTTGDTGYYAACCTTKAGCAHATKAGCATGKT
CGAAGGCCVDTGGACAGGGCACGRGDYTTAGGTGKACCCCARTTGAAYRT
DAAACYTTAMACCCGGVGGTTTAGACACTWADACGSAATAAAGAAHAATD
HTGVGCHATCGSGTCGGC:CAAAACCAATATGGGAMACYGGSACCATGGT
WGGCTGGGTDTGGGGGGCTTGTKKGATTRTKKAAAG:TGGTGTTGTCGAT
GCAACACCGGCAAAATACCTCCATCGCTACATTTTACTCAGGGCAATCCG

FIG. 15B

AATATTGACTTTGATCGCAGTCCTTTTTATGTGAACACCGAGCTTCGTGA
TTGGTCGGTGGGTGAAGGAGAGACCCGTTGTGCGACGGTGAGCGCCTTTG
GATTTAGTGGTACCAATGCCCATGCAGTGATAGAAGAAGCGCCGCCAGTC
GTGCGCCAACATGAAGAGCAGCCGGGTTATTTAAGTGGTCTTATCGGCGC
ATAGTGATGATCAATTACGGCAGCAAGGTTGAGAACTTTATGCGGGTTAT
TGTGAGCATCACCCTGAGTTGGATGTGGGCAARTCYTGAGRTTATACCTT
ATTG:TTGGG:TCGTCAACATTGG:TCGCATCGTCTGGCTGGTG:TGGCG
T:GTGATCTTGAGGATTTGCGGCGGTCACTGGATCAGTGG:TTGGGTCAG
GGTAAGGCTCCCCGAGTGTATGT:GTCT:GCA:TTGGCTGAGGGTGAACC
AC:GTCTA:CAAGTTTCTCTACAGCACGTTGGTAATGAATGTATAAGAGC
A:TGCAGTGAGTCCTGTTCTGCGAATCACTATGTGGACGCGTTATCGACG
GTGGGGGAWTTATATGTTCAGGGTTATCCATTGGAGTATGGTGTGTTGTT
TGSCCAKGGCWATRRWCKTWTTSSKTTKCCGAMCTAKSSGTTTSCWARKC
AGCGTTGTTGGGTACCACAAACAATAAGCCACTCCACAGTGGATGCTATA
TCACAGCATGCTTTTTTACATCCTTTGTTACATCGAAATACTTCGGACTT
TTCATGTCAGCGTTTTAGCTCCACATTTAATGGGAGTGAATTTTTTCTTA
CTGACCACCTTATTCTAGGCAAAAAGATATTGCCCGGAGCCGMTYMTTTC
GAAATGGTCCGAGAGGCCATCAAACAAGCTTGTGGATTTTTGGATAATTC
TGAAGTTGTTATTCAGCTCAATGATATTGTATGGACAAAAGTGATTGCAG
TTGATGATGATATCAAAGAAGTACATATTGATCTTTTTTGTAGAAAATGG
CAGTGAATCATGCTTAACGCATGAGTTTGATAGGCAAAACATATCGCTTA
ACTATGAAGTTTATACGCAAAATAGTGAGGGAAATGGCAGGCAGAATAAA
AAAATTATTCATAATCACSGCATGGTCACCTTGAGTTTCTTTGAATACAA
CCGGAGGTTGTAGATCTTGATGAACTACSCMGCCMCTATAAATCAASCAA
GTCTTANATGCTGAACAAATGTTATTTGGCGTTTGGAATCAATARGTGTT
CAKWWTGGTGACAGGCMCCGATGTATARATACSGTWTATWTCGGTGAGCA
TCAAGTATTARCMAAACTYTYTWTGCCAGAAATTGCAGGAGAWTTGGATA
ARTSCTTTGTTTTGCACCCAGGCATGGTAGATTCTGCTTTACAGGCCACA
TTGGGTATTACTTCTGATATCAATGATATCATGTTAGCCGATCGCCAAGC
CGATTATATCTTGACCCCCAAGTCGACGCTTCCCTTTGCTCTKGWMAAAS
TKKAAWTWAYYSGAAAAYGTWCAGATTCTATGTGGGTTTGGATTCKAAAT
TCTTTATCGACAGACCASAAGTCTCCACGCTCAGCCCGTTAATGATATAC
AACATCTCGACATTGATCTATTGGACGCTCAAGGAAAAGTATGTGTGCGA
ATGCGAGGTTTCTTGTCTCGGGTTTTGCCCAAACAATGGTTAATTCACTA
SCAGAAGAACCGTTTACAGCTTTGAATAACCAGCAAGCACC:TTACTTTT
TCCAATCCCAGGTATGGCGTT:CGCCAGACTCTTATCCAAGTGGCCAATT
AACCCTACCTTAAWTGATGCCCGGTCCATCCTTGGGGTGGTTGTACGNAT
TTGAAATATGGACTTAATGTAGAAAATAGAAGGATGTAGAGGTTTATTGA
CCTTACACTCCCAAACCACTTGGATTTACAGGATCGCTACTTGTGATATT
TGCACTGCAGGTATTTGAAATTGTAAAANGACGTAATGATAGATAAATCC
GTACAACCAGTACTGATTCAGTTGTTAGTTCCTAATGATGGAGAACAAGG
GGTATTCACCAGTTTATTGGCATTACTAAAGGTGGCTCGCTCAGAAAACC

FIG 15B (cont'd)

CCAAAGTGATTACACAATTAATTCAAGTACAATAGTCCCGCAAACCTCGC
AAAATTTACTACGGATTATCACTGAAAATAGTCATGATATAACACATGCA
GAAATTCGTTATCACTTGGNATCAACGTGAATGTTTGKTTTGGKAASCAG
TACCCAAATCTACAAAAACYTTACTCAACTCCCTGGAAATCTAACAGWGT
TTATYTCWTTMCGGGAGGKACCGGTGGAATTAGCGTCACAGTTTGTCAAA
GCGWTAGCAGTGAGTCCCACAAAATCGGTATTAATCTTKGTAGGKCSKTC
ACCACTCMATGRTGAAAAGAAATCTTAWTTAACTAGAACTGGRATCCGTT
GGGGGACCATTATTAAWTMCTATCARAACRGATGTAAGCCAACANGGATC
AAGTTAAAGCWTTGWTTAAARAAATTKTTCASCAWTMCGGTCAATTGAAW
GGKGKTTTSYATTGTGCAGGTATTGTCAACGACAATTTTATTCTCAAAAA
GTCCTCGACAGAATACAAAGAGGTATTGTTGTNTAAAGTATCNGGTNCTG
TCAATTTAGACCAGGCANCACANAGNATAGAGATGGATTTTCTTATNNTA
NTAAAAACGTTATCTGCAGTATTCGGANNNACAGNACAGGGTNTTAGATA
ATNGTCCAAATACTTTTTCCAGGTGTTGGGTAAANGGGATTGGAANCCAA

Contig 5

GCNCTTNCCGCGGTGGCGGCCGCTCTAGAACTAGTGGATCCCCCGGGCTG
CAGTATTCGGAAATGCAGGTCAATCAGATTATTCAACGGCAAATAAATTT
ATGGATGAGTTTGCACGCTATCGTAATGCTCTGGTCAATCGCAAAGAGCG
CTATGGTTTAACACTATCGATTAATTGGCCGTACTGGAGAGAAGGAGGTA
TGAGTATTGAGGAAAATTTTGAAAATATAATGCAAGAGAATACCGGTATG
TCCGCCCTGGAGACATCACAAGGTATTGAAGTATTACAAAGAGCTTGGCA
GTTGCAGTACACGCAATTGTTGGTAATGGTCGGAGAGATGAAGCGAATGG
AGAGCTTTTTGCACAAGCAGGGTTTCGAGCAGATTCCTGTGGTATCCGCC
GATACTGTCAGCGAGAATAAAACCTCGACTATTGAGAATCTTTCAGCCGA
TGTAGATACATTACCATTCATTGAGGTTCAGGCATACAATATGGAACAAA
AAACCCTTGATTACTTAAAAAATGTATTTGCCACCACAACACAAATCCCC
GAGAAAAATATTTATGTTCATGAAACATTGGATAAATACGGAGTTGATTC
ATTGTTGGTGATGAAAATGACCAATCAATTGGAAAAAGTATTTGGAAAAT
TATCTAAAACCCTATTTTTTGAATATCAAACCATTCGCGAACTGGGCGAT
TATTTCCTGAAATTTCATGATGAAAAGTTAAGGGAGTTTTTTCAGATAGA
TAGCAAACTATCTATGTTAAATAATCACGGAGAGATTGAAGTTCAAAAAA
AAGGGGATGAACCATCGGTTGGAGACAGATATAAGTCAGCTGGATGCCGT
GCCTATCTCGGTTTATATCGCCTGTGTCAGCAGTGAATCATCAACCAAAA
AAATGTTAACAATGGTTCCMATANTCATCAGCCAGTAATGGGATATTGGC
GAWTATTGGGTCTGAGKGGGTCGTTATTCCMCAAGCCTGAGAAATATNGG
AGGGAATACTGGGGAAGAAATTTGTGTCAANGGCAAGGGACTGGTATTAN
CNGGAAANTTCCAAANGGAGCCGTTGGGGATTGGSAAGACTATTWYACMS
MTNNNGATCCSTATTCAGCCMGGTGGGACATCGCAGTAAATNGGGGKGGT
TTTATTCGGGATGTTGATAAGTTCGATCCGTTATTTTTTAATATTTCCCC
TAĜKGRGGKGGAGCTYRCTSATCCTCAGGAAYKWTTATTTYCTAGRGTCC

FIG 15B (cont'd)

GCGTKGGCTGCATTGGAAGACCCTGGAWATTGCCGGGNATTATTTGCAAA
TGTTGTCATCAAGGACTAAATCTTCATTCTCGTCGGRAGATGTTGGTGTT
TATGTGGRAGTRATGTCTTCAGAATATCAGTTGTTTGCTTTTGAACAGAA
WTTACGTGGTCACCCCATATCCTCNGGTTGGGAGTTATGCCAGTATTGCT
AMCCSGGTGTCTTATGTTTTARATCTACACNGGCCCAASCATGACAGTGG
ATMCGATGTGKTCTARTTCGTTAACGACGCTWCACCTAGCATGKCAGGGA
TTTAAAACTGGGKCGAAACTGACCYGGGTATTGKCGGKGGAGTTAAWATT
ACCATTCACCCCMATAAATATYAGGCSCTGAGTCACGCYCAAATTATTTY
TACTAGTGGTSGTTGCCAAARTTTTGGTGAACAGGGACAGGGTTATATCC
CTGGTGAAGGAGTGGGTGCCATAATACTGAAGCGCTTGGTCGATGCCGAG
CGTGACGGTGATCATATTTATGGTGTTGTTAAAGGCAGTGCCGTTAACCA
TGGTGGTAAAACCAACGGCTATAACGTTCCTAATCCGAATGCACAACAGC
AAGTGGTGAGTCGTGCACTACGAGAAGCCGCAGTAAACCCCCATCATGTG
ACTTATATTGAGGCACATGGAACAGGAACCCAATTGGGTGACCCGATAGA
AATTACTGKTCTRAMMAAAGCGTTCAATAGTTTGACCAATGAGCTTGGTT
TAAGCGCTGTGSCCAAACMATYGKGTTTGATCGGSTCARKGAAGTCAAAA
TATAGGGCATTGTGAGYCASCAAGCCGGTGTTGCAGCTATTAGCAAAGTA
TTGTTACAAATGCAACACGGGTCAAATAGTCCCTTCTTTACATTCAAAAG
CATTGAATCCCAATATTGATTTTACTGTGACTCCCTTTGTAGTAAACCAA
GGGTTATTGGACTGGAAACGACTTGAAGTTGAAGGAAAGAGGGTRCCGAG
AATKGCTKKYMWWWCKKYTTTTGGGGCCGGTGGCTCAAATGCCCATGTAG
TGATTGAGGAGTACGTTGCCAGCAATGAAAAGCAAGAGGATTTTCAAGGA
AAAGTAATTATCCCTTTATCGGCWATAGACTTSKGATCARCTACAARAAA
WARKGGATCGTTTGCTTAAGTTTATCRAAAAAAATGAAGCAAARAGGTAG
GGAAWTKSGCTTAATTGWTYTTGCCGWAWACATTGCAACTTGGGCGCGAG
GTCAATGARAGGAACGTCTGGNCMTTNGANTTGTAGGAATCNAATACCAA
ATGCTTAANGGAAAGATTTTAGCAAAGGNTTTAAATACTCAGAAAATNGA
TGCACANATTTTTCGGATACTTATCAAAAGRCATTTTATCGGGGTTCGTA
CTAGACCTGGGTGCGTTGRATTTCGCTATTTTTTCTGAAGATGAAGAATA
TGGCCAACACGCTTGATATTTTGGATTCAAAAAGGTAAATACTTTAAG:C
TGGCGGAGCTTTGGGTAAAAGGTGTGACTATTGATTGGAATAAATGGTAT
AACGCATTATTAACCCAGAATAAATATTTGAAACC:TCGTCGTATTAGTT
TGCC:AAC:GTATCCTTTTTCCAGGGATCGTTATTGGATT:CC:AAGTGC
TTTTCCACAA:CAAACATTTTCTACAGTAATTGAGGCAGACGCCAACCMA
AACATTGAATGAGCTACTGTGTTTTGAAGAAAAATGGCAGGTGCAATCGG
AACTACATGACTCTGTTGCAGATCAATCTAATGTTATCAATACATTAATT
TGTTTTTTAACTGAGAAAGAGCATCAAAAAGCATTACAACAATCAATATC
ATTCCATAGCCCGAAAACACGATTGATTTTTATCAGCCAGGCTCAGGCTT
ATGAGCAGTATTCATCAGATCACTATGCGGTTAATCCAGAAATAGGAAAG
ACGTACCAACAGGCTTTTCAACACATTGTGAAAAGTATTCATAAAAGTGA
TGTCACGGACATAATGTATTTATGGGCTCTAGAGGATGAACGCTGGATTA
CGTCTCCTCTACCTATTGTATATCTTTTAAAAAGTATTGAGGTTTCTTTA

FIG 15B (cont'd)

TTAAAACCARAAAAATTACTATTTGTTGGAGAATTTAAGACAAGCTTAKC
RRCGAYTGTYACYYKRAAKCCWRGKKGGGWTTYGMAMRWYCKKWAKSGTT
DGTGCAACSGRATWTKRAGGTTGCGGTGTTATTARAGGCMRTGGAAGGTA
CTYAATCCCATMCAGTGACAAAGCAAATGGATCTTTGGATAGAAAAATTG
TGGTCGTCCTTAAAAGCCCAAAAAGTTCATAGTAGCTTATACCAAAATGG
TCGTAGATATTTTTCTGAAAACCCCAMCCGCTGCAANCTTGTCATGAACC
AAAGTATTCAAATGCTTACAGGGRACTTTATTGATAACAGSTGSYTGTGR
AGGACTGGGTTTTGTCTTYGCAGATTATTTTTCCAAGACATATAAAATTA
ATCTGATATTGGTTGGGCGCTCTGATCTTGATAAAGAGAAAGSWWTCGSR
RATWCRGRMTYKGKWWMAATCAGGTAGTCGAGTGGCTTATGTTCAGACGG
ATATCTGCGATGAAAAGAATCTCCAATTGGAATTGGATATTGCCCAAAAA
TATTGTGGCCCTATTCAGGGTGTCATTCATGCCGCGGGCATCATTGATCA
GAAGACAATTTTTGAAAAAAGTCCTGAAAACTTTCAAGCAGTATTAGCCC
NTAAAATTCAGGGTACATTGATTCTGGATAACGTATTGTCAGCGCAATCA
CTGGATTTTATATGTTACTTTTCTTCAAGCTCGGCTÇTATTAGGTGATGC
AGGATCATGTGATTATGCAATGGCTAATCGATTTTTGATGGCCCATGCAC
AGTATAGAAATACCTYGGTATCTGAARGAAAAMSCAAGGGRAAGACMCTG
KTTWTTCATTGGCCCGCCTGGAATGTGAAAGGAATGGGATTGAATGGACT
GGAATGAGAACGTGAAAMCARAGTTCTWTYTTAAGTCCAAGCGGGCAASG
TCTATTGGACATAAAGGAAGGTTGTGAGGTTATTGAACACATTRCTGGCT
CAGGATTATTYTCAGTGTCYTAWATTGGSTGGKAGGAAAAACCNGTATCW
AACAATTTTTTGGGTCTCACACAAAGATGTTTCTNACCTCACAAGTGAGT
CAAGGGCAGGMAGTRAWGAACWWASRRSWKKMYKKRRASSKSYAMYAAAC
GAGCTGAGATAGAAGACTTTAAGTGTTGAAGAATGTATTATTTTGGACTT
AAAAACTCTGATTACAGAGCAACTTAAAATACCCATCAGCTCATCTGGAT
GTAGAGAGTAATTTAGCAGATTTTGGTTTTGATTCGGTCAGTTTAGCAAA
CTTTTCCCGTGSTTTAAGTATTCMCTATCATTYCAAWAWTACGCCRTSTK
TATTTTTCGGATATCCTACCATAGAGCGTYTAARCCGTTATTTTTTAAAA
GAACMCMCTGCGSTTATGGAGGCGTTTTATCAGCAGAAAAAAACATYTWA
TAGTAACAATACVCTGTCCG:TATAGTCCYTCATGTCAAAGAAAAGCCGW
CAACTGATCTAATATCATCCARC:GCCTCT:CCTTTTATTGCAGATCCAT
TGCCCCCTCAGGSTATTGAGAGTATTGATGAGCCTATTGCCATTATTGGT
ATGAGTGGTCGTTTTCCAGAAGCGCGTACGG:TTAAAGCAATGTGGGAGA
TTTTATCCGAAGGTAAAAGTSYTGTGCAGGAGATTCCTATAGAGCGCTTT
A:ATTGGCATGAATATTATGAACACCCATCGGATGATGTTYGAA:AA:DB
TAATAGTAAATGGAGYGCCTGCATTCCTGGTATTAAAGAATTCGATCCAC
AATTTTTCGAAATTTCTCCAAGAGAGGCAAAAAARCTGGACCCTCTTCAA
CGGCWCTTATCACAGGAATCMTSGAATGCATTGGWAAATSCTGCTTATGK
WWWMYWACRCWKWGMTMWTWARACRATGGGATAYKTKKATTGGTRTTGAW
SMAGGKTWTTATMMRRRYMWGMTCAATKMRGWYGACSGCACACWTTWAWC
CATMAKRMTATTTTRGCATACCMGTYTGSCAGTWYTYWTTARAKYTTAAT
GGSCMWRSSATGGCWRTWAAWRCCGCWTGYTCCTCCGSYWTGGYYGCRMT

FIG 15B (cont'd)

TCACCAMGCTKSCSYSAGTTTACKWCARCAAGCAATKYGAWRCGSCKAWK
GWCSCGGCAGCWWWYTTRMWMWWYACRSSKSAWSWTKAWSTGGSCWTGAY
SSAWGSGRGYMTGAKMYSACMWGAWGSYATAMYGAWAKACCKARNRTCAM
CSYGCCAAKSGCRYAGTGMYTGGAKAGSMWGYTGWTGCARTCGTAYTGMA
ACRWMTCTTKSGGGKTTTCCAAAAGGGGTTMMAAAT

FIG. 15B (cont'd)

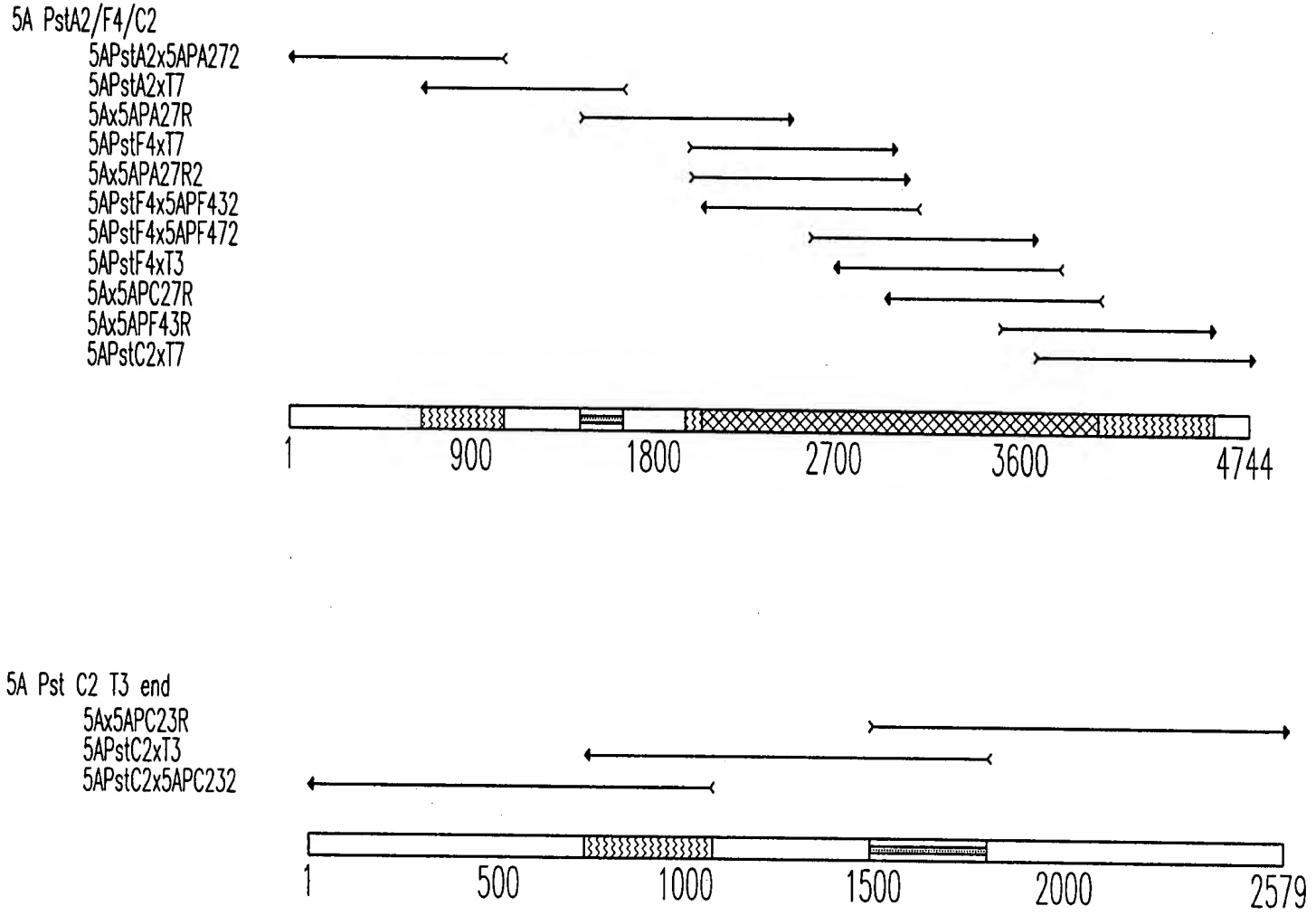

5A PstA2/F4/C2
5APstA2x5APA272
5APstA2xT7
5Ax5APA27R
5APstF4xT7
5Ax5APA27R2
5APstF4x5APF432
5APstF4x5APF472
5APstF4xT3
5Ax5APC27R
5Ax5APF43R
5APstC2xT7
1
900
1800
2700
3600
4744
5A Pst C2 T3 end
5Ax5APC23R
5APstC2xT3
5APstC2x5APC232
1
500
1000
1500
2000
2579

Fig. 16A

5A Pst A2/F4/C2 Overlap Sequence

GNGATGAGATTGATGAGAATACTTAATTTGGTCGAANAGGCCATTACNTC
TATGATTCTTGGTGAATTTATAAGCCAATTAACCNGTGATTTAGTTTGGA
ATATGAAAGAACCCGTTTTATTTGACTATCNGAATATTAATACTTTATCG
AATATGATCGAGAATGAACTCGAAGCTGTTGAGGTATAGTTATGTTAGAA
GTTATTAATAGATACTGCCATGGATACGTATTCGTGCCAGTGGTATTGGC
CNTAGAAGAAAAAGGGTTTTTTGACCTTTTTACAAGGAATAGATACCTTA
CATTTGAAAAAATAAAAACAGAATTAAATGCTAATAGTGGCCATCTTCAA
GTAGCCTTACGCATGTTGCAGTCTGTTTCATGGATATCATGTGATGATAA
AGGGTATGTACTAACAGATGCAGCGGACGAAAGAAATAAAATATCTAGTG
ATTTTATAGAGCTTTTTAATTTCTCTATGAGTCGCTATTTAGAAAATATG
GAAAGGCATGGATTAAAAAAATGGATAGATCAATCCGGAGATAACTGGGG
TATTTCAAACCCTGTATTAACCGATTTTTTGGATGGTGTTTTAATTATTC
CCTTATTACTAGAACTGAAGGAAAATGGTTATTTTGATGCGTTAAAAAAT
GKWAATAGTCTAAATAAAAAATTATTTTTAGGNTGATATCGAACAATCGG
NTTCGCAAWGAAATTATTACACTATTTTAAACAAAAGAACTGGCTCCAAG
AAGAATRAAGAGACGTTTTACTTCACAAAANTCTGGTCAATTTNAYCACT
CAACGAATTTTTATTACCGCAATCCATTGCTTCTTATAAGCCCATGTTTA
TCTCGGGATAACGGAATTAATGTTTGGTAATGCTAGGAGTATTTTTAAAA
AGGGATTGCATGGAGAGGAGAGCCATGTTGACCGAACCTTAAATGTTATT
GGTAGTGGTTTTCAACATCAAAAGTACTTCGCTGATATCGAAGCGTTAGT
CATTCAGTTATTTAATGATAMTTTKTACGATSRAYWSCCGAAATRKRTTS
CRRATATGGGTTGTGGTGATGGGACTCTACTAAAAAATATTTACAATATT
ATCAAGGAAAAATCTGCACGAGGAAACGTGTTGAATCACTATCCCGTGGT
ACTTATTGGTATTGATTATAATGAAGCCGCTTTGCAGGAAACTAACAATA
CACTGGCAGGTGTTGATACAAGACACTATGTTTTAAAAGGCGATATTGGT
GATCCTGAAGGAATGATAAGTGATCTATATGATTTAGGTATTAAAGATCC
TGAGAATATATTGCATGTGCGTTCATTTCTGGATCATGATCGTCCTTATA
TTGCACCCACAGAGGTGATGAATATTGAAGCACGTTCAAAGATATTTGAT
CAGGGCGTGTATGTTGATTCAGAAGGTCAAGCAATATCGCCTGTGGTTAT
GATACAAAGTCTGGTGGAACATTTTAAACGCTGGTCTTGTGTAAAGACGA
AACATGGCTTGCTTATATTAGAAGTACATTCTCTTAACCCTGAGGTTGTC
AACCAATATTTGGATGAAAGTGAAAGTTTGCATTTTGATGCCTATCATGG
TTTTTCCTCTCAATATTTAGTATCGGCTGAGGATTTTCTAATATGTGCTG
CAGAAGCTGGTTTATTTTCTAAACCTGATGTTTCTCAAAATTATCCAAGG
AACTTACCTTTTACTCGAATTACCCTAAATTTTTTTGAAAAAAAGCCTTA
TCAAATTCGTCACCCGAATGAAAATGATTTGTCTGCATTGATGGATTTAG
AAAAAATTTGTCGACCTAATAATCAATGTTTATGCATTGATGACCTTCGC
CAACGCATAGATGAATACCCAAAAGGTCAATGTGTTTTAGAATTAAACAA
TACCATTGTTGCAGTGATTTATTCACAAAAGTGTATTAATAGAGTGTTAG
GCACTGCTGCAGGTGTTTGGCARSWSWWTGSCMDHGGAATRTGBDWDCAC

FIG. 16B

DATTTVTABATHACTBGTTTATCAATDTAWTRCCCAAAATAAAAAAAGAA
TATGCCATMCAATTATTACAGTTTATCTTCTATYTATCATGGTGTTCAWA
ATGATGTTGAAGATGTTATKGGTATTGATGAATGTTATCAGTGCTTAAAT
GAGAAAACGATACAAGCAGGCAGTTTTATGGAAAGTGAGTCAGTTGATGT
TTTATATTCCAAGAGTAGAAAAACATATTGCTAAGTATCCCAATAGATAT
TGGAGTAAATGCTCTGGATGCAGAGCAGGAAATGGGGTTGTTTGGTGCTA
AGTGGTTACTATCTATTTTTCAAAGCCAAGGAGTGATGAAAAAATCAGGT
GAGTATTATCAAAAAGATCAATT : GAGGTTGATGTTAAATATTATTCCAA
AATATTATCGATTATTTGAGTGCTTGCTACTCATATTT : GAAAAAAGAAA
GCTTATTTCAATTCAAAAAAATAC : GGTGCAAACACTTTCCAATATTGAT
GAATTTGCTCTTAACGATCCATTGGT : TGAGTTTGCTTCGT : TTAAGCGT
ACGTTTTCCTCTCAATATGCTAGCCTTATGCCGWTTCTACGATTAATGGC
ATCGTGCCTTTCTCGGTATTTGGAAATATTAACAGGCAAAATACAGGCGC
ATGACATTATTTTTCCAGAA : GGAGGGATGAATTTATTTGAAGGTATTTT
TAAAGGCTATCAACTTTCAGACTATTTTAATCATATTCTCGCAGAGCTGA
TTTATGAAAGGGCTA : ACGCTCTATCCGGTGGGTAATATGAA : TAAAACA
ATTCGTATTTTAGAAATAAGGAGCAGGTACCTGGTGGTGCCAACAGAGTT
TGTATT : GAATAG : AGCTTCMCCGCT : CTCGAATGGTTATAAGAGTTTTA
C : TATACTGGATATCT : CGTCC : TCGTTCCTTCGTTATGGGAGAAAAGT :
AGATTTTYCCGATAAATAT : CCCTGGT : TGCAATATAAGGTGTTAGATAT
: TGAAAG : CAATTTAGA : TGCACAAGGGTTTTACCCTGATAGCTTTGATA
TT : GTGTATGCATCTAATGTT : CTCCACGATACGAAAWTATATACAGTAT
ACCCTTTCCCAAAGTGAGTCACATGCTAACGCAAAATGGC : TTGTTAATG
TTGAATGAA : TTTACTC : GGATGAA : GGATTTGTTACTGTTTACCGGTGG
TTTGTTAGATGGCCTTTGGTTATATGAAGACCCTACCAATCGATTGGATA
ATGTCTGCTTGTTAAATGTTGATCAGTGGCGATCTATATTATTTAAATCA
GGCTTT : AAAAATGTTAAAGACTTTGTTTTACCTTTTGAAAAACTTAATA
TTGAGCAAAGTCAAAGTATTATTGTCTCTGAGTGGATTAATGAAGACCTG
TCTAGTAATG : TTGAAAATGTGGTGAAAAATAATCA : TTGTTT : AGAAAT
ACAAAATCACTC : TGAT : CCGATTACT : GTGGAG : AATAAAATTAG : TTA
CAATT : AAAAGACAA : TCMCWTCGTTA : CACAATAGTATTGGAAGAAAAT
ATTTTTATAAAATTTTAG : GGGGATAAAAAGAAAATTAT : GGATTTTTCT
CC : TAAACGCCCCTTTGATTGGAGTTTATGGGTTGGATTCATATTCGAAC
CTAC : TTGGAA : TTAAAGATCATTACTCGGKRAGCMTTYTTCYATAAAAC
TRGAASMTACTTTKKTMTKYMAWKATKRAAYRMTKSCKKMRSCTMTYTGW
KWCMTCCSAYATSATTCMAGWTRASCYTSRWATTRTCGMTARAKWCCCTA
TTACGGAAGAGATAATGACTGGAGGTACGTCAAGGGTAARAACAGGGCAA
TCGAATSAKAATGAACCTATTGCGATTATTGGTATGTCYTGTTTATTTCC
AGGTGAGGTTACGACAGTTGATGAGTTCTGGGAATTATTAATACAAGAAA
GACATGCCRTTCAACCCTTACCTAAGGACGTTGGCAATGGCCAKAAGGT
GTTGATCCATCGGGAGCACAACTTGGCATTGATCAGGGTGGATTTCTGGA
TGGTATTGATACCTTTGATGCCSACTTCTTTCGTATATCGAGAAAAGAAG

FIG. 16B (cont'd)

CGGAGTTWATGGACCCTCASCAAAGAAAACTACCTGGAATTAARTTGGCA
GGTCATASAGCATGCCGGATATAAACCCATCGGYTTTTTCTGGTCAAAGA
NATYGGYATCTATGTGGGGTGCTTTGTCACCGGTAATTTATATGGGAGTT
ATTTAACTAAAAGTGACCAAANGCCCTAAAAACCAACCGGNAAGGCCTAT
TTKCATGACCARGTARTANATTGTTGTTCGTYTTTMCCCCAATAANAATT
TTCCTATTTTNTATTAATTTTTTAAARGTGCCCMSCSTCCTCTWTCTGAT
WCCGNGCTTGTTCAARYAGTTTTAGGTTGCCTWTTTGACCCAANCARTTT
TATGCGNATTCAATTCGGGGNANGGNGTGAATCAGGCNTCTGGTGGGNTG
GGGAYCAATTWAATRTCCCCTCCSMRTGAWACCGGTTTCTTNATTAYYWA
GCAGGTNTGTTNTCAAAATCNGGGAATGTAAACCTTTNGATCCACCGCCC
GTTGGTTTTNTNCCTGGGNAAAGGGGGCGCTNTTCTTTTTTTNAATCNTT
TTCTCANCCCNATTTTAAAANGATTGTTTTTTNGGGGTTTTAAAGGGGGG
AGATNAAAATNGGGGGCAANCATTNNTTACGGCCCTAACCTNNG

FIG. 16B (cont'd)

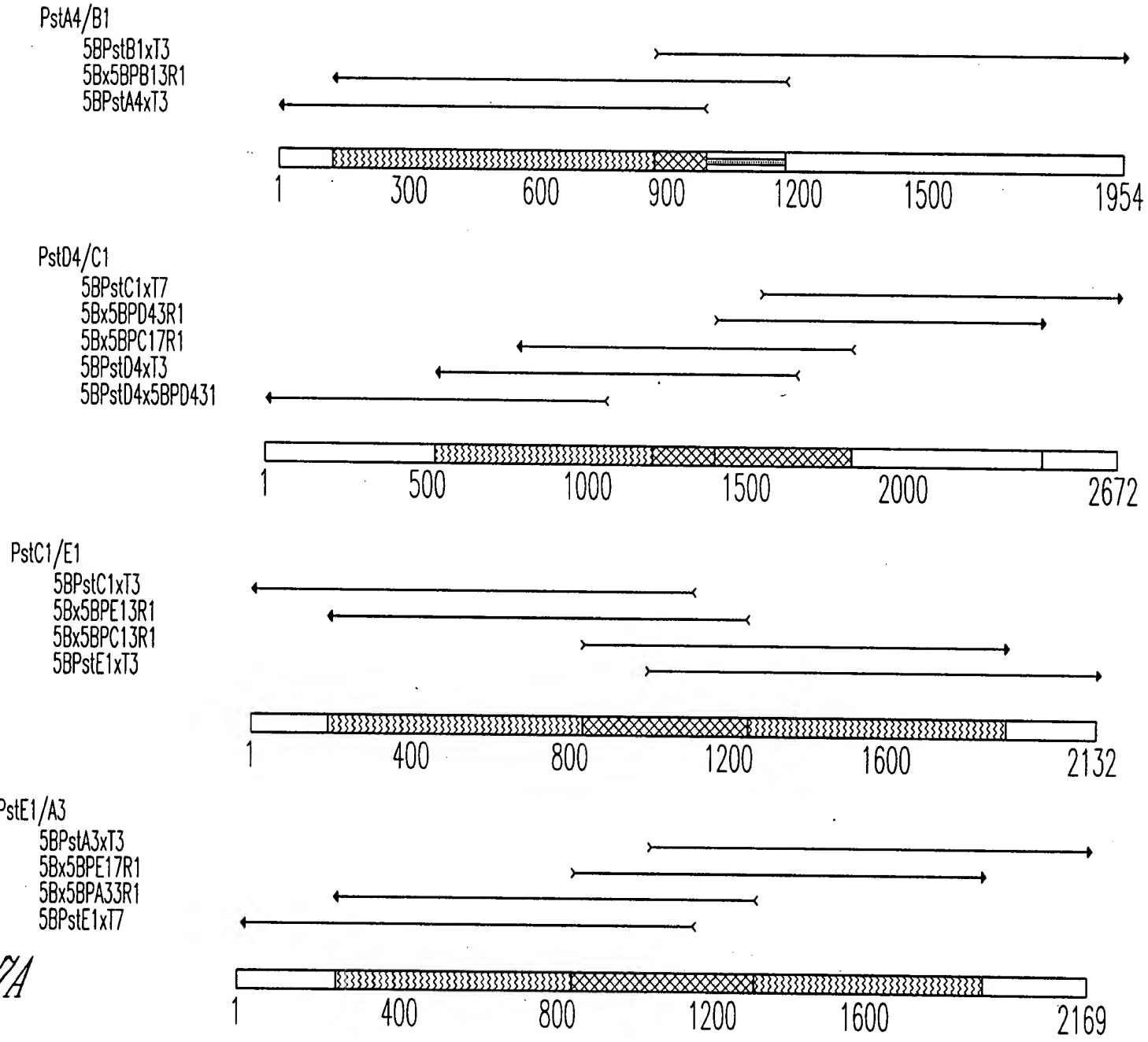

PstA4/B1
5BPstB1xT3
5Bx5BPB13R1
5BPstA4xT3
1
300
600
900
1200
1500
1954
PstD4/C1
5BPstC1xT7
5Bx5BPD43R1
5Bx5BPC17R1
5BPstD4xT3
5BPstD4x5BPD431
1
500
1000
1500
2000
2672
PstC1/E1
5BPstC1xT3
5Bx5BPE13R1
5Bx5BPC13R1
5BPstE1xT3
1
400
800
1200
1600
2132
PstE1/A3
5BPstA3xT3
5Bx5BPE17R1
5Bx5BPA33R1
5BPstE1xT7
1
400
800
1200
1600
2169

Fig. 17A

5B PstI Fragment Overlap Sequences

5B PstA4/B1

GANGATTCCTNCCNCTNCCCATTGAAAAGAGGATGGATTNGANCATATGG
GTGTGCCTGCAAGAAGATAAGTCAATATAATGTAACTCAGAAAAATCAAT
TCCCAAAATGAATACCCCNCAATCWATACAAAAAAWATTGAWAGATTTTT
KGGTKGACATTACTAACTTTTTSGAGGCNAAGACATCMATCCMRGCMGGA
TGCCTGGTGACTATGGTGKTGATTCCATTATTAGGTATGAGATTTYTTAA
TCGAATTAACCYCCACCTTTAAWATAGAAGCTGATGCTTTATTACTAACA
GAAGGAACGATTMACCAGTATATCTCATAAARKWCMTTCTTTTATTGTTG
ATAAAAAAAATTACCCAATGTTACCAAATTTTGGATTAGAAAATGATTCT
AATAAAGAAAATAAAGGCTGGGTAAAGCCTTCTTTTATTGAATTTATTAA
ATTTGAAATCAATCCTGAATATATAGAAAGCAGTACAAAAAATAAAGATT
ACGCGATTCTTGAAAATCTAATAAATAATGGAGTTGGAGTTTGGAGAGAA
AATAATCATCTATGTTTTGAGTTTTTTTATGAAACTCATACAAATGAAAC
AATTAAAAAAAATAGTGTTTTCACCCGAAATACTTTTTAACTCTCTAGATA
AAGGTAAACGATACTTTCCAAGTAGCTGCCAGCAAAAAAACAGTCTATAT
CAAACGGAAGTTGAGAAGTTTCCATATAATCTTATTCAAGGATTTAGAGT
GGAAATGCCAGTCAATATTGAAATTTTAAATAAAGCATTTAATCATTTGG
TTAACACATATTCAATTTTCAGAACAAAAGCAATGTTGATCAATAAGCAA
TGGATTCAGGTAATACATGATGGTTTATCAGTAAGATGCGAAGA:AATTA
YATACGAAGGATTATCTGCAGGAAAAAGATTTTACGCAACAACTAAT:AG
TATTTCAAAAAGAGCAAGGTAAAAAATTATTTGATATCGATAATCTGCCT
TTATTAAAAATTTATTTTATCCATAATGGTAAAGACTTAGCAGCTATTTT
TGTTCATGCGCATCATTTTTGTGCCGATGGATTTACATTTTTTTCTTTTC
AGAAAGAATTTCATGATACTTRTGAAAGTATTATRAACGGANTGGRRWAT
CCGGAAACGKGTTCSAWAAAGTGATGGCTGAATATGGCCACTTTGCATTG
TGTGAATATAATCCCAAAAACAAGGAGCTGACAAAAAACTGGCTTGATAA
AATTCGAGATAAAAATTTTTCTTTAAAATTTAAAGATAAGAAAGACTATG
TCGGTCAACTGTCAAGTGGAGAAAAAATTATTGAGCTAGAAGTTTCTGTA
AATATGCTGGAAAAATTAAGATTATTTAATGATGCGAATAATACCACACT
GACGCAATTGCTATGTTGTGCTGTTGCAATTTTACTGTATCGCCTCTCGA
GGCTACCAGTACCCTTGCAAATGGTCAACAGCCGTAGAGATAAAATAGAA
TTTGAAATAATGATGGGTGATTTTGCATCAACTCTGCCCTATGGATTTTA
GGAACCTTTCCAAAAGCATTTTCTCTATTCCNGGATGGTACCTTTTTTAA
GTTATTGGAAAAANGGAAAAAGGCNTTNAATTNTCCCCCCNAGGATTTTT
TAAANGGGGTTTGGATNNTTTNTCNGGGAACCCTCAANAAAAAAAAAATT
TNTTTCCAAAAAAAAAAGGGGCCCCTTAAANTCCCCATTAAGGGAATTTT
TTAAATTTTTTAATTTCCCGGGNAAAATTATTTNTTTAAATTCCGGAATT
AAGGCCNAANTGGAATTAATTGGNAAAATTTCCANTTTGGGTTTTTAAAA
AGGGGAAAAANCCCANNAATTTGGGTTTCCTTAAAAANAAAAAAAAGGGG

FIG 17B

GGNGGCCCCCCGGTGGGTTCNTTNNTGGGGNAAAAATTTAAAAATTTAA
TTTN

5B PstD4/C1

ANCCGAAAAANACCNAAAGGGNNGCCGGCCCNTGTCCTNCGAGTGCATNA
TAAAAAANCCAGTNATAAGNNGGNNACAATANTCATGCCCCGCGCCCNCC
GNAAGNAACCTNANTGGGTTNAAGGCTTCAAGGGCATCGGTCAAGGAACC
TTTCGGCGGGCTTTTGCTGTGCGACAGGCTCACGTNTAAAAAGGAAATAA
ATCATGGGTCATAAAATTATCACGTTGTCCGGGCGCGGCGACGAATGTTC
TGTATGCGCTGTTTTTCCGTGGCGCGTTGCTGTCTGGTGATCTGCCTTCT
AAATCTGGCACAGCCGAATTGCGCGAGCTTGGTTTTGCTGAAACCAGACA
CACAGCAACTGAATACCAGAAAGAAAATCACTTTACCTTTCTGACATCAG
AAGGGCAGAAATTTGCCGTTGAACACCTGGTCAATACGCGTTTTGGTGAG
CAGCAATATTGCGCTTCGATGACGCTTGGCGTTGAGATTGATACCTCTGC
TGCACAAAAGGCAATCGACGAGCTGSRCYMSCRMAKTYGKGMCMCCGKMW
CCTWMRARSTTWTTCSCAAWRRAGKKTYWTTMAWMAAGSMCSCYGSKRKY
GSWWWTGGWRCTAWCCACGMARCSSMWWTYGAAAMACCKSRKCYGGNTKW
CSRAWAWMWACMRSMYCASCCTTGGWAWMMARMRWSMTGASYYWGCKCWG
AAMAAKGTWACCSTCRGKGCCGMTWWGKKCAAWKTTWMACCYSRWRWWRR
YMCMAAMATTGARRCSTTGMYCGRAACCSCGMTGAAAAA::CGCTGH:TG
::AATGTRVGGCGT:TGGATGTCHCAAAGCAAATGGCASCAGACAA:GAA
AGCGATGGATGAACT:::GGCTTCCTTATGTCCGCCCGGCCAKTCATGAT
GGAATGTTTCCCCCSGGTGGTGTTATCTGGCACCAGTGCCGTCGATAG:T
A:TGC:AA:TT:GA:TAA:TT:ATT:ATCATTT:G:CGGG:TCCTTT:CC
GG:CGATCC:GCCTTGTTTACGGGGCGGCGACCTCG:CGGGTTTTCGCTA
TTTATGAAAATTTTCCGGTTTAAGGCGTTTCCGTTCTTCTTCGTCATAAC
TTAATGTTTTTATTTAAAATACCCTCTGAAAAGAAAGGAAACGACAGGTG
CTGAAAGCGAGCTTTTTGGCCTCTGTCGTTTCCTTTCTCTGTTTTTGTCC
CGTGGAATGAACAATGGAAGTCAACAAAAAGCAGAGCTTATCGATGATAA
GCGGTCAAACATGAGAATTCGCGGCCGCATAATACGACTCACTATAGGGA
TCATATTTATGGTGTTATTAAAGGGAGTGCCATCAATCATGGTGGCAAAA
CCAATGGCTATAGTGTGCCTAATCCGGATAAGCAACAGCGTGTCATTAGT
GAGGCTTTGCAGCGGGCTCAAATAGCTCCTCATCAAGTCAGTTATGTAGA
AGCGCATGGTGCGGGAAGCCGTTTAGGCGACCCAATAGAAATTACGGCTC
TCAGCAAAGCATTTAACAATGTTAGTGCGCAATTTAATGTGAAAAGTGCA
GCCAATCAATCGTGTTTTATTGGCTCGGTAAAATCCAATATAGGAAACTG
TGAATCTGCAGCAGGGAC:TGCCAGTATTAGCAAAGTATTGCTACAAATG
AAACATGGGCAAATAGTGCCGTCCTTGCATTCAAAAGAACTGAATCCCAA
TATTGATTTTTCAGCAACTCCCTTTGTGGTTAACCAAGAACTGCGCGATT
GGCAGAGACCGCTGATTGATGGAAAAACAGTGCCGAGAGTTGCGGGTGTC
TTTTCATTTGGGGCAGGTGGTTCCAAT:GC:TTACGTGGTGATTGAAGAG

FIG. 17B (cont'd)

TATATTGCGAAGATACCGACAAATAACACCAGGGAATCTATAAACCATAG
GTCTATTATTCCATTATCAGCACGAACTGCTGAGCAGTTGCGGCAAATTG
CCAGTAGATTGCTGGCATTTATTGAAAAGAACAAGCAAGACAGCGTGGTT
ACCCCCTTAATAGATATTGCTTATACATTGCAGGTAGGACGCGAAGCAAT
GGATGAACGCTTGGGGTTTATTGTGAGTTCAACCCGATGAATTAGTCGAA
GAACTACGAAGATATCTTCAAACACACGATGATATGGAAGAGCTTTATCG
AGGTCAGGTTAATCGATATGAAGACACCTTTCTTACTATGGCGGCTGGAT
GGAAGATCTCTCTTGAGGCTATCCCACCCATTTGGGATTAAAAAACGAAA
AACTGGTCTTAAGTTTAATGCCAATTATTTGGGATTTAAAAGGGGTCTTT
GTGGATTTAAWTTKGGGRKRAGWTATASSWTKKYTTMCCAAARGRKGWTW
KTCCYCSGCRMATKARMKKAYTACCTRTCCYTTYGGCRGSMATATTTTTA
RGWTKKTAMMSWTYRNMCCCTCWTWCCTYTTTKTGRCCCCAGGGNCCAAA
TTTATTTTNGTTTGNGGGGAATTTNGTTTTAAAAAAGAATTCGGTTAANC
CCACCTNCCNTTAAACTTTCATTTTGGGGGGNAATGGGTTTTATTGGNAA
CCCATTCCNAAAACCAAAAANGGGCCTTTTTTTTTCCATTCCNAAAAAA
ACCAAATTTTGGCCCCTTTTTTGGGGGGGGGAAAAAAAAAACCCNAANGG
GGAAAAATTNTTTTTAAAAAAA

5B PstC1/E1

NNNANNTTTCCNATTCCCTTGGGCGGAAATTTTTTGCCCAGGGNCCGNAT
AACCAAAGGACCCTTTTTCNGGCCCCTTAAAAAAACCCAATTTNCCCCNT
TTAATCCCCCCGAATAAAAGAACCTTTCCCAAAAAAAGGGNAANTTGAAN
TGGGGGGNANCNTGGGAAATCCCAAGCCAAAAAAAGGCCCAAYMTCGCCC
WARAACRKKCCAWWAATSSSGAWAASMCYYCCAGAWARWATTKWTKRRWA
MWRAWCYAGYWWMSCAMATCRGRTGTTWTATGGRRSSSRGWMYAWWTRAA
AARYMYTCCAWYKTKTTKSSGRRTCAATKATGSSRKWTYYTCAAYMTTGG
GACTCMCYYMTCMMMWWTTTGAAAACCMYWATTATAKKTRTAAGSGGGCC
AAATAATCAATGTTGGATATGGTTAAMCCGATAAAAAAAAGCCTCAATAA
ATTTTNCTGCCAACAACTAAGACAGCTCTACAATAAACATAAAAGCAATA
ATGAGTCCCTGTGATTATTTCCCATGAAAAAAACAATGGCATTTTAATAG
ATAGATCTCATACTGAATCGAATATTGCCATTATAGGTATATCAGGGTGT
TTTCCGGATGCAAAAAATGTTAATGAATTTTGGGAAAATTTAAAAAATGC
TCGTCATAGTGTTAAAGAAATTCCCTATAACCGGTCTTGGGATATTGATA
ATTACTTTGATACTTCTTCGCAAACACATGCACAGGAATATGTTAAACAA
GGAGCATTTTTAGAAAATATCGATCTTTTTGATCCGCTGTTTTTTAATAT
TTCTCCGGTGGAAGCAGAGCTTATGGATCCAACTGAACGATTTTTCCTTC
AGGAATCCTGGAAAGCGATTGA:A:GATGCTGGTTATGATGCATCAAACT
:TAAGTGGAAAACG:T:TGGGGGGTATTTGCCTGTGCAAAGGGAGACTAC
CATGCCATTATTCACAAGCAGGATAAAACTCGTATCATGACCACTGACTC
TATGCCTCCTGCCAGGTTTGCTTATTTATTGAATTTG::TTAGGGCCTGC
AGTTCACGTTGATA:C:GGCTTGTTCATC:GTCTTTGGCAGCAATTGCTT

FIG. 17B (cont'd)

ACGCATGTGATAGCCTCATTCTTAGAAATTGTGATGTTGCCATTGCAGGA
GGTGGAAATATCAACTCAACTCCCAGCCTTTTGATCAGTTCAAGTCAACT
TGGTTTGTTGTCAAAAGATGGCCGATGTTATGCCTTSDATCAACGTGCAA
ACGGAACGGTATTAGGGGAGGCGGTASCATCGATTATTTTAAAACCCTTA
CAACAAGCGATTGACGATGGTGATCAGGTCTACGGATTAATTAAGGGTTG
GGGAATGAATCAARATGGAAAAACCAATGGTMTTACTGCTCCTAGTGTTA
AGTCACAAATTCAKTTGGAAACGGATGTTTATCAAAAATTTATGATWAAT
CCTGAACATATTACKATGGTTSMAGCCCATGGAACTGGGACTAAACTASG
AGATCCCATTGAGGYTCAGGCATTAMCAGAAGCTTTTCASAAATATACTY
AAAAAACAKGGTMTTGTGCACTAGNGTTCTTTRAAAARWAAATATTGGAC
ATACNTTTTTCCCGCTGCTGGRAKTCKCTAGATGTTAATMAAGGGTTTTG
TTGTCCATTTCWCANCATTYACMARGWTTCYYTYCRTARTTWWTAATTYW
MAARSTATNAMTTWTTCAWWATTCCTATYGTNAAWWACCCYWATTTTKKW
KTAAAAMCAGCYCATWWTTWWYYSSSKGTMATTWWNYYCCNCTTTWTTRW
WMCCCMMYTTGCGRRCSGTTTTTTTCGTKKKTGTTTCRWCAKAGAATCTM
MMSYCCTTTTYTYGCMMMMAANMRNNTTAAACMMMTWRCCTTTYTTTRGR
KGGSGYCCCCCNCCCNGGGGGAANCCCCCAANTGGGTCCCCNNTTTTGGG
GGGGGGGNTTTNGNNAANGNAAAATTTTTTTTTCATGCCCNNANAAAAGG
TCCTTCCGCAACCTTTTTTAAAAAATAANCCCNTCCCCNAAAAANTTGGG
NATTTGGGANTGGGAATTAAAAAGGCCCCTTTTTTACCCCCCCGNGTTTA
ATTTTAATTCCCCCCTTTTTTGGTTCCGGGCC

5B PstE1/A3

NNACCAATTTTCCGAAACCCAAGNCATTTTGAAAGGGGTTTTTGGGGCCC
GGGGTTGAAAAAAAAAAANGGGGTTTTTTGGCCCCCCCCCCCNNAGNAANTA
AAAATGGGTAAGGAACNCGCCCCCCCACTTTGGAAAACCTTCCCCNAAAA
AAAATAAAAAGGCNTTTGGAATTTTTTAACNAAAATNNCGGGGGNTGGGC
CNTTTAAANAACCCCCCCNTTTNCAAAAAATGCGARRGGKGGGYCTCCWR
RNAYTYYAAWAWGRAMGSGKTAWYTMCCWAKTGRGGGGWNTTWTATCAWT
AAAGGNSSGGGGKTYTAWKWTTTAWRAARRGGRAGCTTTAGRAAWAWAAW
ARWCMGTKGKKTTTAARAGARATTKWWAARRRAACTGGRWTRAAKTWWWW
RWRTTATWATANAAATRKKWAAKGGWWRTATAGAGGGAAAAAAATTTAAA
GGATAAATGAARGAAACCCATCWCCATTTATTTTCCAAGASGACCAAAGA
AATGATAGAAGTTGTTAAATTTATGGRTGCGTAAAAAGAAATTTTCCCAA
AWTTTTAAWTYCTTTGGGTTAAAGGATTAAACMCTTGRTTGGAAGCAATT
ATATGGTAAAGAACMTCCAGCTCGTATTAGTTTGCCAWGCTATCCTTTTG
CCAAAGAGCGGTTATTGGTTGGATACTGATAAGTTAGTCGACGGTAGTTA
TYTCAACCCTAGRCAAGAGGGAATWAATACAGATAGTGATAAGTTTGATG
AAAAGCTTTATGAATCCTTGTTGGACAATCTTTTTTCCAAAACTATGACM
CCTGATGAAGCTATTAAGTTAATGGAAGAGGAGGTATCATGAAAAAATTA
ATTAAATTGATTTATGAAAAAGTTTTTGAAAATAAACTATCAAAATCAGA

FIG. 17B (cont'd)

AGCCTTGTCGTTGATTAGTGGATTGAAGGCGAGCAATACTACTATCCTTC
ATCCCCTTATACATGAAAACACGTCAAGTTTTTTTGAAAAAAAATTCAGT
TCAACTTTTTCTGGTAGAGAATTTTTCTTTCGGATAGATGCTAACCTTAA
AAAAAGTGTATTATCTCCTGTAACATACCTTGAAATGGTTTATGCTGCAG
CAACAAAGGCAATGGCTGGTGAGAAATTTTCAGCGCAAT:TTAAAAAAAT
TGAGTGGCAATATCCAGCTATTGTTCATGAAGAGTCGATAACAGTTCATA
TTCGTTTTTTTAAAGATCCAAATACCTGGTTGGATACAAGTGAGGAGAAA
TTTTTATGCTATCAAATTTACACAATTTCAAATAATCAAGAAACA:A:GC
GATATTGTTCACAACCGGGGTGTAATAGATTATGATCATAAAAATAGTGA
ATTAAGTCCACTTGATATTTTTTCACTACAAAAGCATATCAGTGAATATT
TTCTAGACCCTAAAGAGGATAGTGATTTTTTTGAAAAGAGCGATAAAAGT
AATGAGCCCTATTATCAGAGTATTGAATTGTTACATATTAATTTTCAGAA
AGAAGCGCTTATAAAATTATCGTTTGATCACGTATCAGGATACATATAAC
CATCAAGAGTCATTGGTTTTACATCCAGATATACTGGAGTTGGCTTTACA
ATCCTGTAGCTTCTTATGCCTTGATATGGCAGATACTGGAATCTGAGTTT
TTCGGGGGAGTTGCAGCCCAGTGAGTGGTAGATGCTTTTATCAAATNCAT
GTCTCGGCTGGTCCAGGGACCTCAAATGGTGGGKTTTGGGTTACCGGCTT
AACARSYTTCCATGGAAGGGTAGGGNTTAWATAGSCRCANTATTTGGCCY
TKGGTGRTGGAATRAWRGTWATKCSKGGGGWCCWGSTAMWWAGGGTTGGG
TTYTCAAAACCAWAWRAAMMSKGTTTYTTGRRKWWTTTTTTSSMMMMGCC
SCNAAATTNGAACCCCCCNNNGNGTAAANCCCCNNGAAATTNNTNTTTTT
TTTTTNCCCCGNNCCCCAANCNNAGAAANGAACCTTTNCGNGGTTTTGGG
CAATTAAATTTAATTAGGGCAAACCCCCCNTTAATNGGAAGGGGGGNCCA
NTTGGGNGGTTTTTTTNGGAAAAAGGAAGGGNAAATTGGGGNNAAAAAGG
CCCCCCCAAANTTNGGTTTTAAAAAGGGGAAAAAAAAATNAACCGTTTAA
AAAAATTNNCCCCCAAANT

FIG. 17B (cont'd)

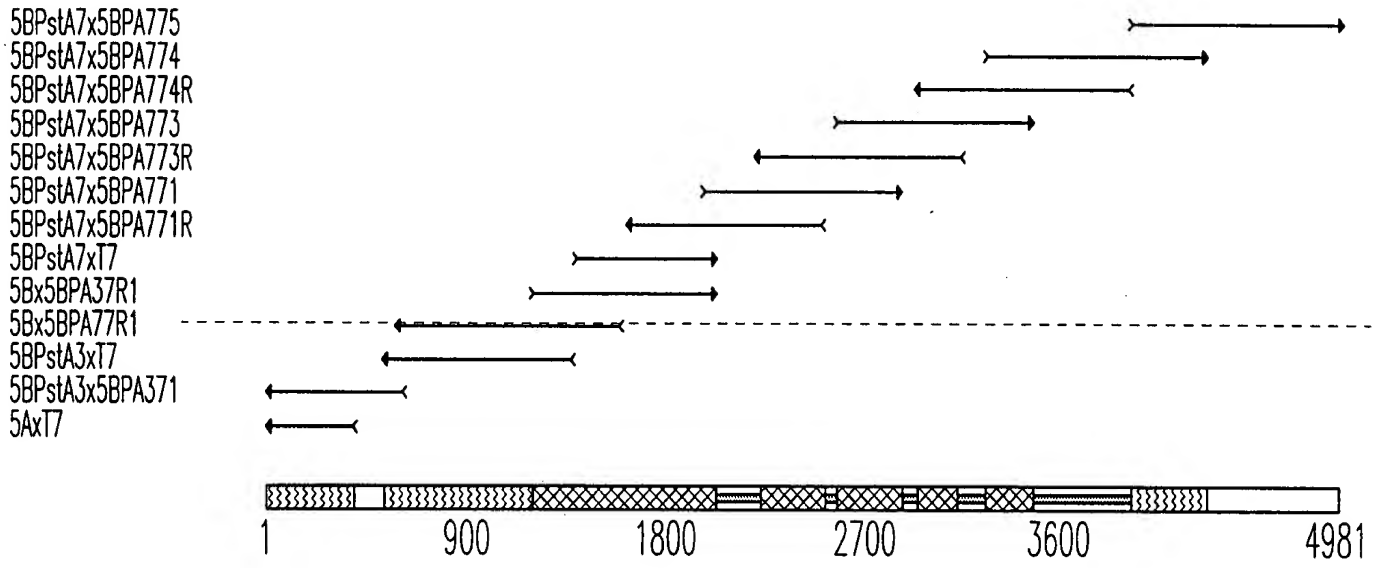

5BPstA7x5BPA775
5BPstA7x5BPA774
5BPstA7x5BPA774R
5BPstA7x5BPA773
5BPstA7x5BPA773R
5BPstA7x5BPA771
5BPstA7x5BPA771R
5BPstA7xT7
5Bx5BPA37R1
5Bx5BPA77R1
5BPstA3xT7
5BPstA3x5BPA371
5AxT7
1
900
1800
2700
3600
4981

Fig. 18A

5B PstA7/5A T7 Sequence

GCACCGTTGGAACGTTATGGCATCGATTCATTGATTGTGATTCAGGTGAA
TCAGGCGTTGGCGGCTATTTTTGATGCGCTGCCTAAAACACTGTTATTTG
AATATCAAACGATAGACGCGGTCGTGGCTTACTTGGTTGAGCAGCACCGC
CAGGCATGTAGGGTGTGGACGGGGTTAACGGCAACGGGTCAAGCTCAAAG
AGAGGGTGTCATCTCCTCTACCTCATCAGCGGGTGTTGAACCTGTGACAC
CGAGACAGAAAGAGGGTCATCCTATACAGAAAGACATCAAGTGCCGAGAA
CACCCAGTGACAGACGAGCCTATAGCCATTATTGGTCTGAGTGGACATTA
TCCGCAAGCGAATAGTTTGGATGCGTATTGGGAAAACTTGAAGGCAGGAA
AAGATTGTATTCGTGAAATTCCCGATGACCGTTGGTCGCTAGACGGTTTT
TTCCATGAAGATGTTGAAGAAGCGATTGCGCAAGGGAAAAGTTACAGTAA
ATGGGGCGGTTTTTTAGAGGGATTTGCTGATTTTGACCCTCTCTTTTTTA
ACCTATCGCCGCGAGAGGTGATGACGATCGATCCACAGGAGCGTTTGTTT
TTACAGAGTGCGTGGGAAGCTGTGGAGGATGCCGGTTATCGCGTGCTCAG
CTTGCTTCGCAGTTTAACAAGCGTGTGGGTGTATTTGCGGGTATTACCAA
GACGGGTTTTGATTTTTATGGAATACAATCGGATCSAGCTSBTYT:YCGC
WT:ATACTTCCT:TTACKCCAGGTTTAAAARGCCWMGWTCAGCT:TKTTT
TSGGGTTTTTTAABTHHGCGGGKGGGTKTTTTKVSCCVWAT:AGCA:CSG
DCGGTTTTTKMATTTTTTTAWTGGRAA:AC::CAATCGGGATCAAC:TCT
TT:TCCGCTTATACTTCCTTTAGCTCAGTGG::CT:AATCGTGTGTCTTT
ATTTTTTGGGTTTACAAGGCCCAAGTC:TGT:CTATTGATACCATGTGCT
CCTCATCTTTGACGGCAATACATGAAGCCTGCGAGCATCTGCATCGCCAA
CGATGTGAACTGGCTATTGCGGGGGGAGTGAATCTTTATTTG:CACCCTT
CAACCTATATTAGATTGTGTACTTTACGGATGCTTTCCAAAGAGGGCCTG
TGCAAAAGCTTTGGTTATGGTGGTAATGGGTTTGTACCGGGAG:AGGGGG
TTGGCGCTGTGTTGTTGAAACCCTTG::TCTAGAGCCATTCAGGATCAGG
ATAGTATATATGCCATTATTAGAGGGAGTTGTGTTAATCATGGTGGCAAA
ACCAATGGTTATACTGTGCCTAATCCACATTCTCA:AGGCGATCTTA:TT
CGTGAAGCTTTGGA:TAAAGCTCA:G:GTTAA:TGCCCGTAT:GGTCAGT
TATATAGAAGCC:CATGGTACA:GGTACAGAGTTGGGTGACC:CAATAGA
GGTAAGAGGCTTAACGCAAGCCTT:TCAACAAGATACTGATGATGTTGGT
TTTTGTGTAT:TGG:GTTCAGTTAAATCTA:ATATTGGTCATC:TGGAAG
CTGCCGCTGGTATCGCTGGGCTGAGCA:AAGTTATTCTGCAGATGAAGTA
TGAAAAAATAGTGGCAAGCCTACATGCAGAAAGACTGAATGCCAATATAA
ATTTTGAACAAACTCCTTTTGTTGTTCAGCAATCACTTAATGAATGGGAA
AGACCAAACCTTCATGTTAATGGAAAAATCAAAGAATATCCTAGGACCGC
GGGGATCTCTTCTTTTGGTGCGGGAGGGACGAATGCACATATAATAATAC
AGGAGTATATTCCAGAAGTCAGTCAGACACGACAATCAGAGGTCAGGAAT
AAACCAGCTCACCCGGTGGCCATTCTGCTATCTGCGCATACTTCCGCTCA
GTTACTGAAGATGGCCGAGGCACTTTTACTATTTATTCGTACCATAGTGA
ATAATATGGACTCATCCTATTCGGCAGGGGATGAGATGACTCACTTGGTA

FIG 18B

AATGTAGCCTATACATTACAGGTTGGACGTGAAGCTATGCAGGAACGCCT
GGGGTTTGTTGTGAATTCCCTGAGTGATATTGAAGTGAAACTACAAAAAT
TTATTGATAAGGAAAATGATATTGAAGACTTTTATCGGGATCAAATCAAG
ACTAAAAAAGAAATCTCAGCTCTATTTAATTCGGATGAAGATTTGCAGGA
AGTGATTAAACAATGGATGCGACAAAAAAAACTATCCAGGCTTTTGTCAC
TTTGGGTTAAGGGAGTTCACTGTGATTGGAACTTCTTGTATCAACATATG
CGAACCAAACCTTATCGGTTACATTTACCAACGTACCCATTTGCTTATAA
TCGATATTGGATTGATGATAATAATAAAAATCAATCGACTGTAGTTGAAA
AAACCAACACTATTATTAAAGAGAGAAAAGAGCAAGTTAGATTAGAGCCG
CTTGATTTTATGGAAAGGAAAAAACTTAATGTCCATGAAAAAAAGCCATT
TCATTGTTCTTTATCAACTCAATCAGAGGCCTGGTCCGGGGCGAACACTC
AGACATCCAGTGGTAAACAAAGACGATCTTATGTACAGGTGCTTAAACAA
GACGATATATTAAGGGATCTTAAATCAGCGCTGCCTACAGCTGTTGAAGG
TATGATACCAACATTAAATCGAACTGGTGTCATGACAGAAAGCTTAAGCT
CCTACTCAGAAGCATTTGCAAACTATGCTGGTATGTGTGGTGGAGAAGTA
TTGGACTTGGGGTGTGCCTATGGAATTGCAACGATTGCAGCGTTGGAGCG
AGGGGCTCAAGTATTAGCCGTAGATATGGAGGCACAGCATCTGGAAATAT
TATCAGACCGTATTCGGGATGAAGTGAAGTCGCGTTTATCGACACAAGTA
GGCAAGTTGCTGGATCTTCATTTTGATCAAGAACGTTTTGCTGCGATCCA
TGCGAGCCGAGTGCTACACTTTTTAAACCCACAGGATTTCCAGCAAGCAT
TACAAAAAATGTATGGCTGGTTAAAACCCGGAGGAAAATTATTTATTGTG
ACGGATACCCCTTATATGGGTTATTGGGCGAGCAAAGCAGGGGTTTATGA
AACTCGTAAAGCAGCAGGGGATTTATGGCCAGGCTACATAGATAATGTTG
GTTCTCACTTTAATACTAAAGAGATAGAAGGGGCCCCAACTCTGATCAAC
CCGATGGACCCGGAAATACTGCATCGTGAATGCAAAAAATTTGGTTTTCA
TGTAGAAGAGACTGTTTTTTTTGCAGGAGAAGCCTTTGCACTAAATAATA
GTTTAGAAAAATCAGGTAGAGAGCATGTTGGTATAATAGCATTGAAGCCG
GAATTGGAAGATTCCGACAGGCTTGAGAAATCGCTATTGCCAGTACGGAA
AACTGAAACGGAGAATAAGGAAATTAGCCTACTGCAAATACAGACAATGC
TTAGGGAGAGTCTTGAATTTGAATTGGATATAGAGCCCGGTATGTTGGAT
GAGTTAAAACCTTTTACAGATTTAGGGTTGGACTCGATAAATGGAGTCAC
CTGGATACGAAAAATCAATAGTCACTATGGATTATCTATGACTGCGACGA
AAGTATATGATTACCCAAATATTATTGAGTTGGCAGAGTTTTTAAGAAAA
CAAATTATTTCGAATGATGAAAAGCAGCATCAACCATCTATATCAACAAT
ATTTCCCACTTCATTGGATGAATTATTGAAAAAAATACAAGAAGGTACTT
TAGGGATTGAAGAAGCCGACCAATTAATTGATGAACTACCTGATTACCAT
CTAGATATGGAACTCCATGAGTTGTTATAAGGGAAAGCGAGGTATTTTTG
TGTCACACCGATGGATGGTAAAACCATTTTGGCTGAAAAGAATTTAGCTC
AAATCGGCGCAGCTTTGCTGCGTCCGAGTGATTTGACTTGTTATGGTGAA
CTCAACTATGCTTGTACGGCATTTCCTTACATAAGTAGGTGAAAAATGGA
AACAATTAGTGTAAACCAATTTAGAGACAATTTGAAAAGTTTTGTAGAAC
AAGCAGTTAGCACGCATGAGCCAATTAAAGTAACGCGCAGAGCCAGTGAG

FIG. 18B (cont'd)

GCTTTCGTCGTGATAAGTGCCGATGATTGGGAGCAAGAACAGGAAAGCCT
TTATATTTTTCAGAATAGTGATTTGATGCAACAAATTGCAGATTCGCTTG
GTACGCATACTCAGGGCAAGGGATACAAACCAACGGATAATGAGTTGAAT
GAAATCACTGGTGCTTGAAGGCCATACCTGGGAAAACTGGGAAAAGCTTT
GCGAGCAAGATAAGCGGTTACACAAGGCGTTATGCAAACTACTCAAAGAA
ATGCTTCACTCGGAAGATCTAACCTCCGGATTAGGTAAACCTGAGCCGCT
TAAGCATAACTTATCTGGCTTATGGTCTCGGCGCATTTCGCAAAAAGACC
GACTGATATATCGCTTTATTTTCGCTATCGGTGGTCACTACGATCAACAT
TTAGTTGCCATAACGCCATAACAAGGGAAAATATGAAGCGCAGCGGAATC
TTTTCCCTTGTGGTTACGCTTGTTATAAGGTTGTTTATTCATTTAGACTC
CCTCTGTGTTTACTGCAYTGTGTGGTAGCCAGTCCAGTCCACGTTTTTTG
KGGGCSRWTTTCAATGTGCTTGTTATACACTTAGATGTCCGAAAAKGRAA
MCCAMCCMCCATTGTATATTTYTTTTAACTCAATGGATAAATGTTTTATA
GCTAACTGTGAAGCTTCGATTGCCTGATTGAACTCACGATCATTTTTCTC
TGATTTTTCATAAAAGGCGTTAGGTGAAAATGAAGCTGGTTCTGATTTTT
TATGTACAGCTTTATTCCTGAATCTAATTAAAACTTTCATATATTGATAT
GCTTGCTTTGATTTATCAATTTCTTTTCCAGTAATAATTCGTGTGCAAAC
TAGCCATTTAGAAATAATATCTAATTTATCTAAGTGCTCAACAACCGTAT
TTGTCAGACAAAATGACGAGCAGAAAAATCWTAGACTGTATATTCTTAAA
TACWTAGAGGACAATTWTCMCACAAAAGATWTCTTGCCTCCACTGAGGCT
ATTTCTTTYTTGKAATCTTTATCCCTAATATTTTCCCAGCTTAGTGACCA
ATAATTTATATCATWMAGGTACTCTGTAAGCCGATAATACCTTTTGCTTA
TATCCCAATAATTGGGACCAAAAAAAGTGCAAAAGCGTGGGCGCAGATCG
AGAAATTTATTCCGTTGYGGAATAGACTATTTGCATCAATTACTGCTCAA
WGCCGCTGAAAATTTCTGCAAATTGGTAAGGGCTTTACGTGTTTTGTCTT
GTACAWAGCTGTTCTATTCAGCAGGAGACAAACATGGATTAGCAAGTATG
GGTGTAGTTATCACTKAAAGAAATCATTGGCAGTATAGTCAACTCATTGA
AAGTCCTATATTAACGTCGCCGAAAGTTAAATAGTTTTTACGATGAGATG
TAGGCATTGTGATAAATGTGCTGCACATCATCACAATCATTCAGCATATC
CATAAACCTCTCGAACATCTTAACATCATCTCCCGTCACTGGAGTTGTTG
TTTGAGGAATAAATTGGATTTCGTCGACATCRRACTGAAGCTTTTCAAAG
GCTTCAGATAACGCTTGCTTGGCCTTAAAATATTCAGTATGAGGAACCAG
TACGCTGATCTTACCGTTTTTTGCTTCAATATCGGTGACATCCACATTTT
CCATCATTAATGTCTCCAATACGACTTCTTCGTCATTTCCAGTGAAAACA
AGGATTGCACAATGATTAAACATATGGCTAACACTGCCTTGGGTACCAAT
CTTGCTTTTGGTTTTGGTAAAACAAATACGCACATCACCGAAGGTGCGAT

FIG. 18B (cont'd)

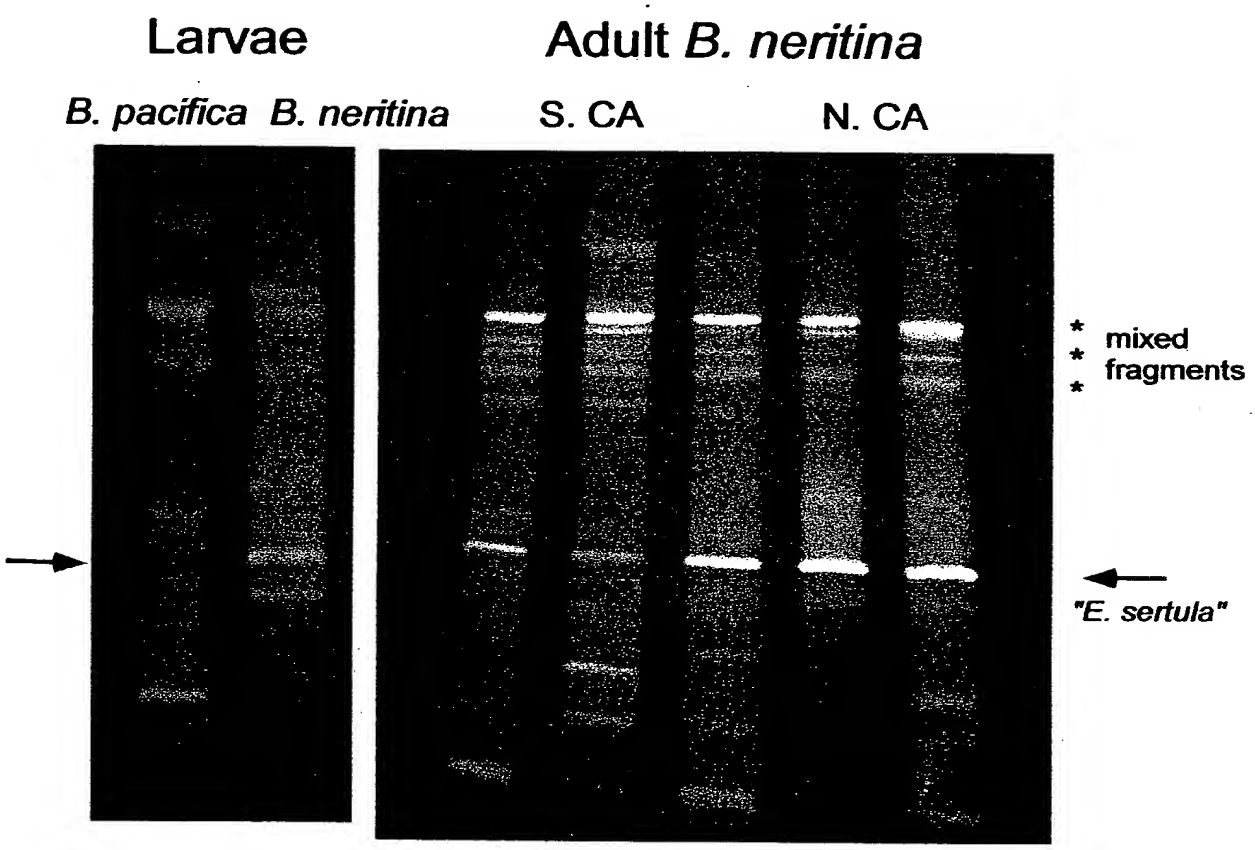


FIG. 19

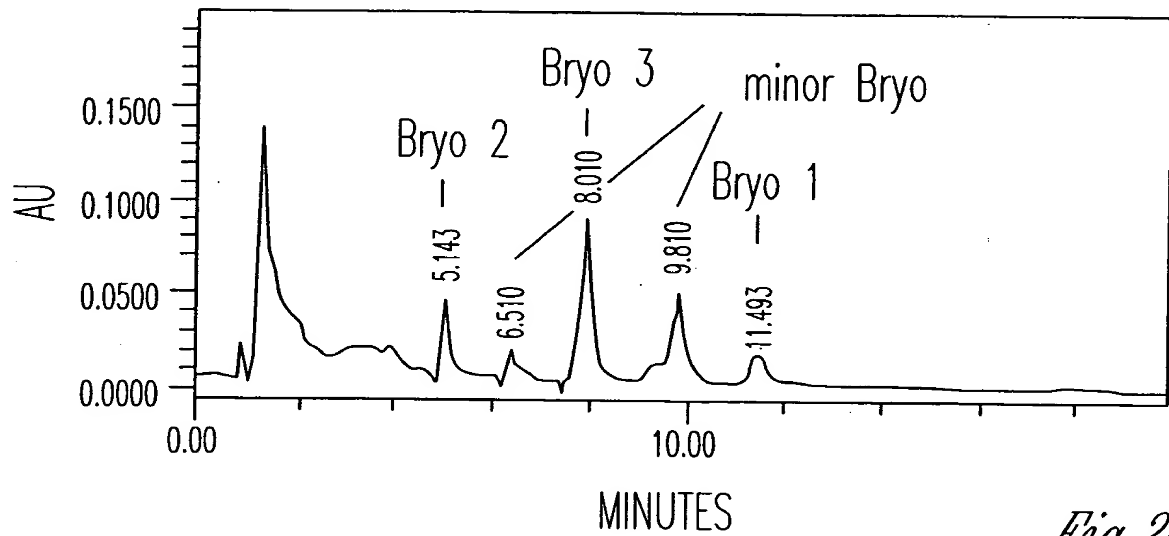


Fig. 20A

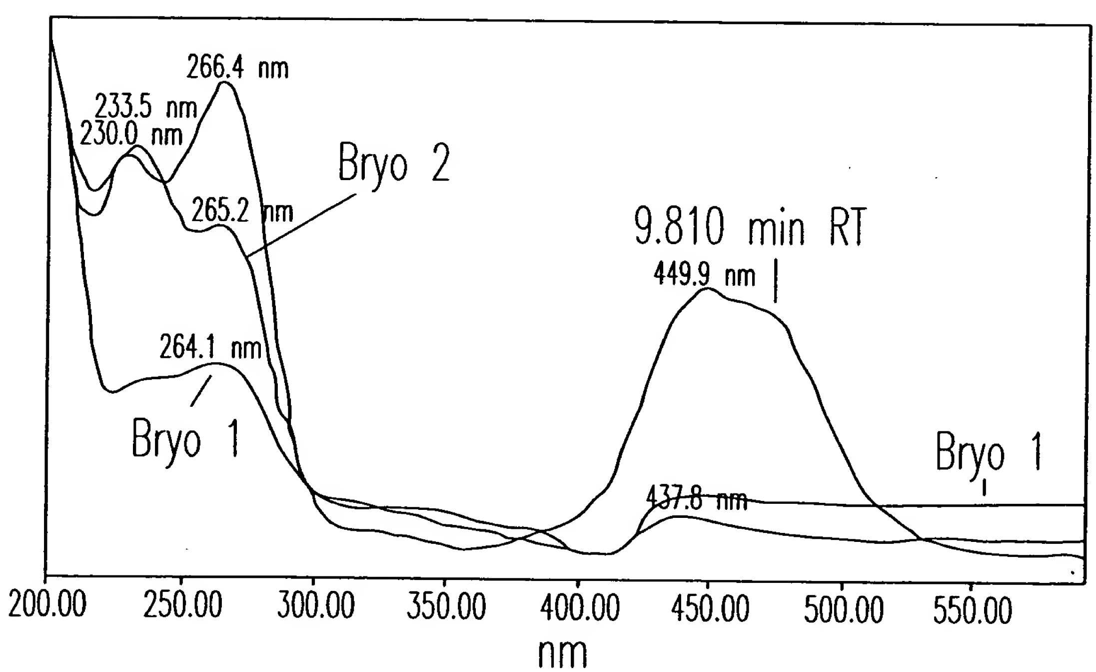


Fig. 20B

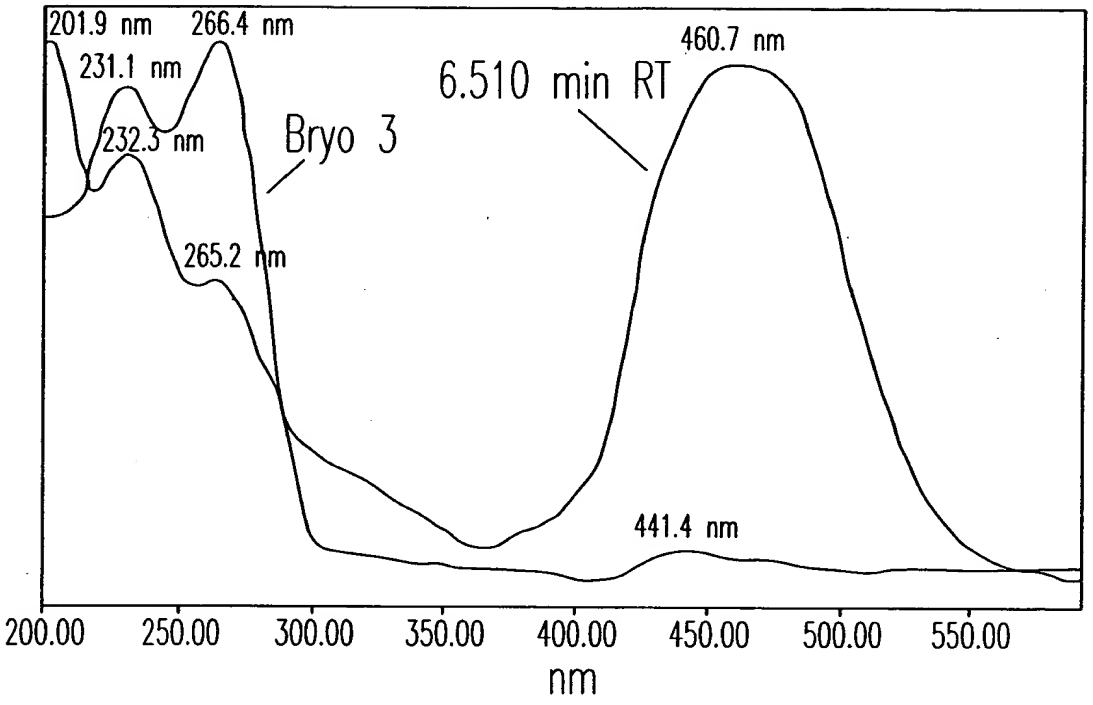


Fig.20C

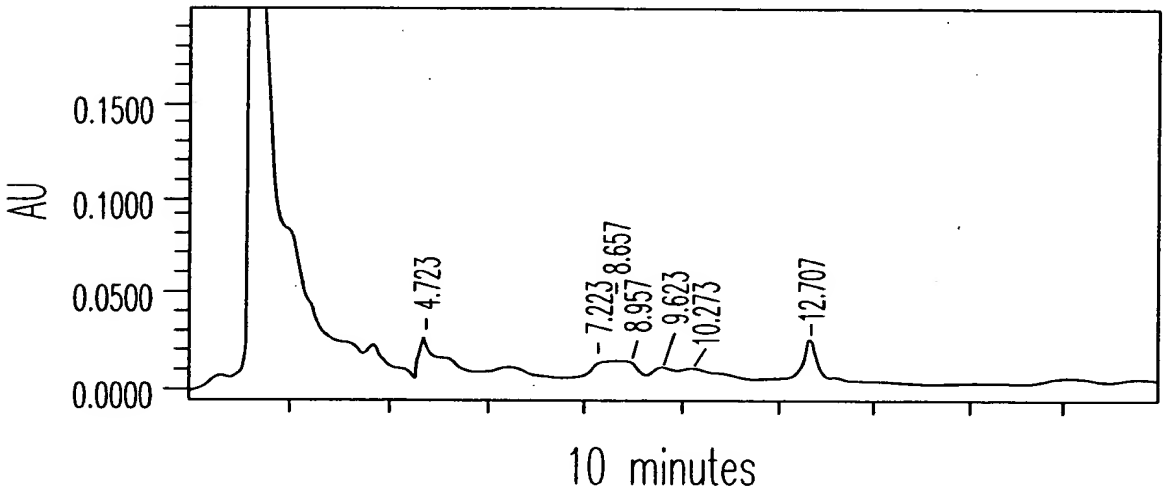


Fig.20D

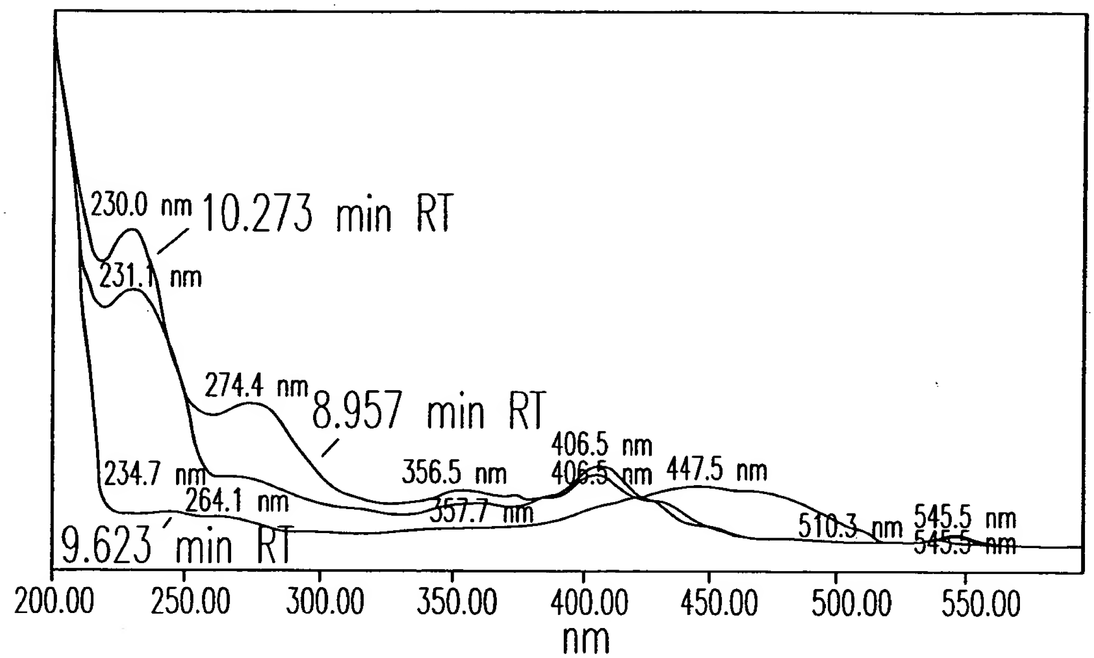


Fig.20E

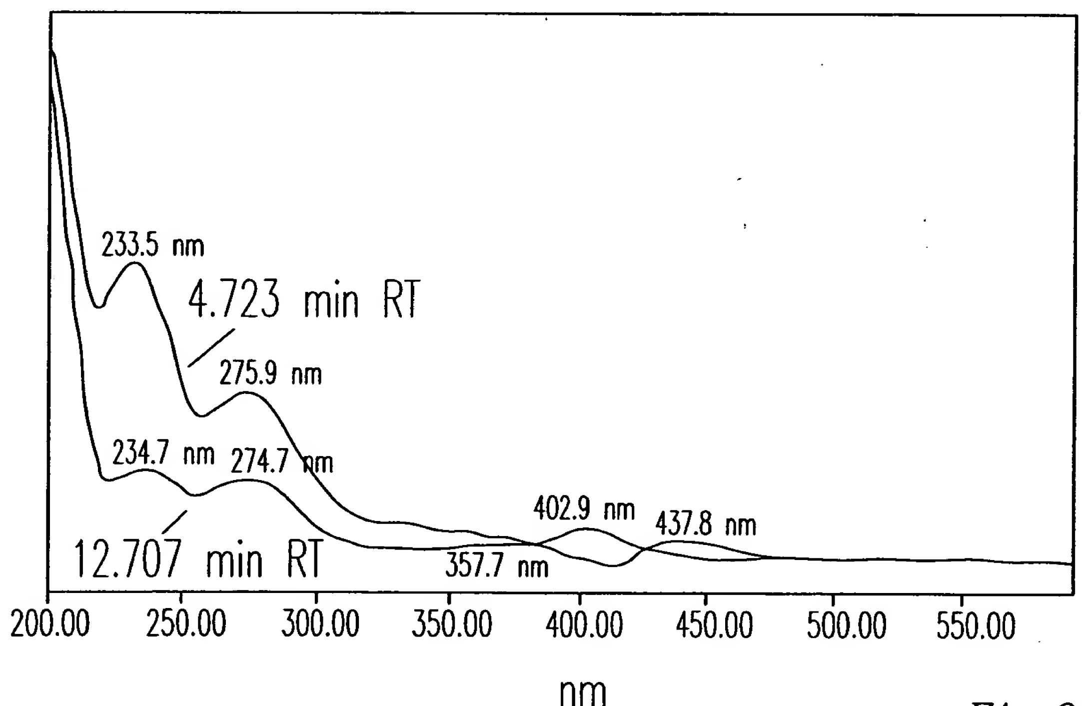


Fig.20F

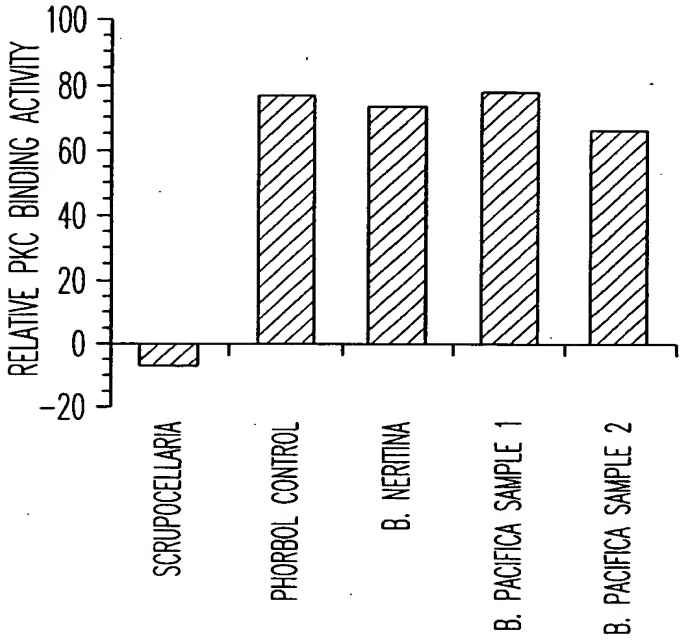


Fig. 21

```
aaattgggtg atccgataga agtcgagaca ttggcagaat cgtttcgagt ctatacggac 60
aagcgtcatt actgtgctct ggggtcggta aaaagtaata ttggtcattt gggggtaggt 120
gctgggatag cgggcgtgac caaagtattg ttgtctttgc agcatcgcat gttaccaccg 180
acgattcatt gtgaggatgt aaacccacag attgcgttgg aaggtagccc cttttatatc 240
aatacggaat taaagccttg gcagtctggt gacggtatac cacgacgggc tggtgtcagt 300
tcttttggtg tcagt                                                  315
```

SEQID NO:9

FIG. 22A

```
aaattgggtg atccgataga agtcgagaca ttggcagaat cgtttcgagt ctatacggac 60
aagcgtcatt actgtgctct ggggtcggta aaaagtaata ttggtcattt gggggtaggt 120
gctgggatag cgggcgtgac caaagtattg ttgtctttgc agcatcgcat gttaccaccg 180
acgattcatt gtgaggatgt aaacccacag attgcgttgg aaggtagccc cttttatatc 240
aatacggaat taaagccttg gcagtctggt gacggtatac cacgacgggc tggtgtcagt 300
tcttttggtg tcagtggtac caatgcacat cttgtattag aagaatatac tcaccgagta 360
acatcaccat tacaaaatac tattttaccc cagaacggtt tgtttattgt tccactatct 420
gcaaaaaatg atgaatgctt aaatgcttgt gtcgaacgac tgttattttt tctaaaaagc 480
aggcaatccg atacatataa aaaatattcc ttaagtgata cagctcctat attgttagat 540
ttagcatata ccctccaggt cagtagggaa gcgatgacaa aacgagttgc ctttgtagtg 600
aaaacaacaa tagagttaat ggaaaaatta aatgcattta tagaaaaaca aaatactata 660
aaagcaagta atataaaagg ttgttactac tcttcgacta aaacatcgag tccatttgat 720
aatgaatcga ctgatc                                                  736
```

SEQID NO:11

FIG. 22B

```
cgattaggtg atccaattga attggcagca ctctcgaagg cgtttgagga gggaacacaa 60
cgaaaacagt tttgcggtat cggttcagta aaatcaaata ttggtcatct ggatgttgct 120
gctggagtcg ttggtctgat caagacagca ttgtcgctgc agcaccgttt gttgcctccc 180
acgatcaact acgaagcacc caatcgggaa atcaattttg aacaatcacc ctttcatgtg 240
attgatgaac tcacggagtg gcggggtcaa ggtggaccac ttcgtgctgg tgtcagctcg 300
tttggaattg gt                                                     312
```

SEQID NO:13

FIG. 22C

```
caattgggcg accctattga actgcaagca ctggccgatg tgtatagagt tgataactgg 60
cgcaaaaaca cctgtgccct cggctcggta aaaagcaata ttggccatac ctctgcggcc 120
tctggtgtgg ctggtataca caaggtgctg ttatcgctta agcatcgaca attagtagcg 180
agcctgcatt ttaatagcgc caatcaccac tttgattttc aacagtcgcc tttttatgtc 240
aatacccagc taaggccctg ggatcaagca gagggactag aagaaagccg ccgccgggct 300
gcggtcagtt cttttggtgt cagt                                        324
```

SEQID NO:15

FIG. 22D

```
gagtatggag atccaatgga attgacggct gcagctgccg tctttggacg aggacgaaat 60
cagaaaaatc gtttgctggt cggatcagta aaagccaata ttagtcacct ggaagcagcc 120
gggggtattt ctggactgat caaagcagta ctggcaatgc agcatggcgt gattccacag 180
caattacact gcaaagaacc gagtcctcat atcccctgga aacgtctgcc tctcgatttg 240
gtacaagagc agactgtctg gccggaaagt gaagagcgga tcgcggctgt aacagcgtcg 300
gattagcg                                                          308
```

SEQID NO:17

FIG. 22E

caacttggcg atgaaataga agttcgcgct ctgagtaaag tgtacggaga ttcacagtcc 60 *SEQID NO:19*
acgacatacc ttggtgctgt aaaaagcaac ataggtcatg ccaacgcagg agcgggcatt 120
gctggtttta ttaaaacggt gctgtctctt taccatggca aaattgcacc caatgcaggc 180
aataccgagc ccaatgcagc tttgaacctt gacgcgtttc attttgcatt accaaaaact 240
ttgcttacat ggccggagtg tgatgttcga cgggcagcga tcagctcact gggttttggt 300

FIG. 22F

gccttgggtg atcctattga atttggcgca atcaaggctg tgtatgggcc tggtcggtct 60 *SEQID NO:21*
tctccgctgg tgctcggtgc acttaaatcg aacatcgggc atttggaagc gactgcaggt 120
gttgcagctc tgattaaggc agttttggtt cttcaacatg gcgtggctcc ggccaatttg 180
cactgtcaca aattgaatcc gcttctggat atcgacggct tcaatgttgt gttcccgcag 240
tctgagaccc ccttgcacag ctctctgcag ctacttggcg ggtatcagtt cgttcgggtt 300
tggt 304

FIG. 22G

acttggtgat ccctattgag gtgggggctc ttacagaatc atttcgatcc ctatacagaa 60 *SEQID NO:23*
aaaaagaact actgtgcctc gggatcggta aaaagcaata tcgggcatct tttaaccgcg 120
gccggagtat ctggagtagt caaagtgtta ctcgctttga aacataagca acttccacct 180
tcctgtcatc tggtgaaaat caatgagcat atcaaccttg aggacagtcc attttatatc 240
aatacggcat taaagaaatg ggaagtatcg gaaggtgagg ctcgcagggc cgcagtcagc 300
tcgtttggtt cagc 314

FIG. 22H

ccactcggcg acccaatcga gatggcagca ttaaaacagg cttttgggac tcaaaagaaa 60 *SEQID NO:25*
aaatactgtg cgatagggtc ggtgaagagc aacattggtc atgccgatac ggcggctggc 120
gtcgctggtc tcatcaagac ggtgatggca ctcaaggcgc gtcagatacc gcctagcttg 180
cactttgaga cccccaatcc gcagatcgat tttgccgaca gtccctttta tgtaaataca 240
accttgaaag attggaacac caacggtgtt ccgcgccgcg cgggcgtgag ttcgtttggc 300
atcggt 306

FIG. 22I

gtggtcggag atccgattga ggtcgtggga ctgacgaaag cctatcaagc gcacactcag 60 *SEQID NO:27*
gaacgtcaat actgcggact gggttcggtg aagacgaata ttggccatac ggactcggct 120
gctggcattg ctggacttct caagatcgtc atggcgatga agcatcgtca actgccgccg 180
agcttgaatt ttgaaacacc aaatccagac ctggatctgg agaatagtcc gttcttcatc 240
cagacgaagc tgaaggattg ggaaagtgtg gggcctcgtc gtgccgcgtt gagttcgttt 300
ggtttgggt 309

FIG. 22J

gatggaactc attaccaccc acaaaaaagt ccgtttcttc aacgcggttg atttaattaa 60 *SEQID NO:29*
ccagctaatc aacgaacaac aaaagcagca aacgggcaaa ctcatcagag ccttattgca 120
ggtggattgt ttaagtattg atgaactcgg ttatatccca ttccctaaat ccggtggggc 180
gttgctcttc cacctcatca gtaaacggta tgagaagacc agtattatca tcagcaccaa 240
tctggctttt ggggaatgga acagtgtgtt tggtgatgcc aagatgacca ccgcgttatt 300
ggatcgtatc acgcatcatt gttcaatcat cgaaaccaag catgcgtcgt atcgttttaa 360
gcagagtcag aaacagacat gaaagtagct ttcaccggtg ggacagtgtt agatgcaaac 420
cccgggtcag ctttaagtgc aatttgaaaa ccaatgtgat aattgtggct aagatcaata 480
aaaataaaat ttttttattg attatgatga tccacgttaa aaaaaatact ataaatatga 540
aataatattt caactttatt tttgatggtc gttgttgagg aatttttttgt gagttatcga 600
gatattttga aggctttaca ggatgaaaaa attagttttg aagaggctaa atataagtta 660
ataaaaagaa aagataaaaa atcaaaacag cgtttaaatc atgatcgtga attaaatcga 720
tcgatgaata ttacgccaaa aatagtgaat aattacggtt tagtattatt gggcggtcat 780
ttatttgaag aactccgtct gagtgaatgg aaagctgcca accctaaccc taatgaagtt 840
agcattcagg tcaaggcatc cgccattagt tttaccgata ccttgtgtgt acaaggttta 900
tatccatcac actatccctt tgttccgggc tttgaagtat cgggagtgat tcgtcaagtg 960
ggtgaacaca taaccgactt acacgtgggt gatgaagtta ttgcgttcac aggatcatca 1020
atgggagggc atgctgccta tgtgacggtg ccacaagatt acgtggtacg aaaacccaag 1080
gacttatctt ttgaggatgc ctgtagcttc ccattggctt ttgcgaccgt ctatcacagt 1140
tttgcacggg gaaaattatc tcacaacgat catatcttga tacaaacggc gacaggtggc 1200
tgtggtttga tggcacttca gttggcgcgt ttaaagcagt gtgtgtgtta tgggacctcc 1260
agccgagaag acaagcttgc actcctcaaa cagtgggcac tgccctacgt cttcaattat 1320
aagacgtgca atattgatga ggagattcaa cgcgtcagtg gtcatcgagg tgtcgatgtc 1380
gtcttaaata tgctcccagg agagcatata caacaagggc tgaatagttt agccaaggga 1440
ggccgttatt tggaactgtc gatgcatgga ttgttaacga acgaacctgt cagtctgtcg 1500
tctctgcgtt ttaatcaatc cgttcaaacc atcaatttac tggggttact caataagggt 1560
gatgatggct ttatcgggtc tgtattagcg caaatggttt cctggattga atcaggtgat 1620
ttagtgtcaa ccgtgtcgcg tatttatccg ttggatcaga tcggtgaagc gttacgttat 1680

FIG. 22K

```
gtctctgaag gggagcatat aggtaaagtc gttgtgagtc atacagcgac agagccgatg 1740
gattgcagac agcgctgtat tgacaatgta ttgaagcaag ggcaaatggc ggccttgacc 1800
gcgacagggg gaaaaagccg ggtgtggggt ggtactggtg tcaatgacaa accgtctcct 1860
gctgttggta tagaggagcg tttattggaa gggatagcgg tgattggtct gtcaggccag 1920
tatccgaagt cgaagacact ggagcaattt tggcagaccc tagcggatgg agtggattgc 1980
atctcagaga ttcctgctga tcgctggtcg ttagaagagt attactcgcc aataccggaa 2040
gggggtaaaa cgtattgtaa gtggatgggt gttttggagg acatggattg ttttgatccg 2100
ttgttttttg cgatatctcc tcgggaagcg gaagtgatgg acccacagca acggttattt 2160
ttagagaatg catggagttg tatagaggat gcggggatta accctaagat gttatcccgt 2220
agtcgatgtg gggtatttgt tgggtgcggt gcgaatgatt acagcgctct aatgaacagt 2280
agccactcaa cgagtctcga attaatgaag gaattaggca acaactcttc cattttatct 2340
gcacgaatct cctacttttt aaatttaaag ggcccttgtc ttgcgattga taccgcatgt 2400
tcttcttcat tagtggccat tgccgagtcg tgtaatagtc tggtgttggg tactagtgac 2460
ttggcgttgg caggtggagt gttgctgatg ccaggtccat ccttacatat aggtttgagt 2520
catggagaaa tgttatcagt agatggtcgc tgctttacct ttgaccaacg ggccaacggt 2580
tttgtacctg gagagggtgt cggcgttgtc ttgttaaaac gcatgtcgga tgcggtgcgt 2640
gatggtgatc ccattcgtgc agtgatacgg ggctggggtg tgaatcagga tggtagaagt 2700
aatggtatta cggcgccgag ttcaaaagcg caaagtgctc tggagcaaga ggtttatcaa 2760
cgttttaata ttgatccatc gagcattacc ttagtcgaag cacacggaac gggcaccaaa 2820
ttgggtgatc cgatagaagt cgaggcattg gcagaatcgt ttcgagtcta tacggacaag 2880
cgtcattact gtgctctggg gtcggtaaaa agtaatattg gtcatttggg ggtaggtgct 2940
gggatagcgg gcgtgaccaa agtattgtta tctttgcagc atcgcatgtt accaccgacg 3000
attcattgtg aggatgtaaa cccacagatt gcgttggaag gtagcccctt ttatatcaat 3060
acggaattaa agccttggca gtctggtgac agtataccac gacgggctgg tgtcagttct 3120
tttggattta gtggtaccaa tgcacatctt gtattggagg aatatcttcc tcactcgaca 3180
ggaacaatag agtcgtttgc tgcgaatcat gcaagtacag ttattattcc tttgtcagcg 3240
aaaagtcata atagtttata cacatatgct caaacgctat tgatattttt aaaacgtagt 3300
caggttactg acgctaaaaa aatcacaata gatcacatgg aatgtcgctt gttggattta 3360
```

FIG. 22K (cont'd)

gcctatactt tgcaagtggg tcgcgaggca atggacaaac ggataagttt tattgtcaac 3420
acaaagcaag cactcgtgga aaagctaaat gcttttctag agaaggaaaa gactataaca 3480
gactgttacc actatttatt tgatagtgac aaaccgtcta cagaaatttt ccgtttagac 3540
gaagatgaca aagtattaat aaacagctgg ataagtcaaa gtcaatatca caaattagcc 3600
gaagcctgga gccaaggact cgatatcgac tggacgctac tctataccca ctcatcaacc 3660
cctcgtcgca ttagcctgcc cacgtatccc tttgccagag accgctactg gctaccagaa 3720
aaaccacgct ataacgcggc taatcatccg gtatccaacc atcaaacaac cactcagaat 3780
cactcacgct ttgccattga tacggatcac gatgtcgttg ccgagatcat gcaaaagaca 3840
catcaacagg aactggaaca atggttatta aaactgttgt ttgtgcaatt gcaacatatg 3900
ggattatttc aacatcgtgt ctttgagaca gcgaccgctc tacgtcaaag tgcaggcatc 3960
gttgataaat atgatcgctg gtggcatgag tgtttaagcg ttttacagga tgcgggttat 4020
cttgaatgga aagacgatag cgtagccgcc gcacaggcat tggagtctga atcgcaagag 4080
gcatggtgga gccgatggaa cacggagtat aagcattacc agaatgatcc ggaaaaaaag 4140
acgttagcga tattgattaa cgattgctta caggcattac caggggtgtt aagtggtgag 4200
caattaataa cggatattat tttccccaat ggttcgatgg agaaaatgga aggcttatat 4260
aaaaataata ggattgcaga ttattgtaat cagtgtgttg gagacctgct cgtccagttt 4320
attgaagcac gtctgtcaag agatgccaat gcgaggatac ggattatcga aattggggcc 4380
ggtacggggg gcaccaccgc gatagtgctg ccaatgttac aagcctatca ggatcatatc 4440
gatacgtatt gttatacgga tgtttccaaa gcctttttga tgcatggaca ggaacactac 4500
ggcgaacaat accccctatct gagttattgc ctctgtaata ttgaacagga cttagtggct 4560
caaggaatca gcgttggtga ttatgatatt gcgatcgcag ccaatgtatt acatgccacg 4620
cggaatatac acgaaacggt cagccatgtg aggcaggcat tggcggccaa cggtttattg 4680
attttaaatg agtttagcca aaaaagcgtt ttttcgagtg tgatatttgg tttgatcgat 4740
ggttgggcct tatctgaaga tacgggattg cgtattcctg gaagcccagg gttatatcct 4800
aagcagtggc aagcggtact ggaggcgtcg ggttttggtg acgtggaatt tccgctccat 4860
gacgctcgtg agttgggtca acaaatcatc ctggcaacca acgcccatgc gaacgttgct 4920
agcgatcttg cgacatcggt gattgatcat gcccccaaga gattgccatc cgccgaggtc 4980
agcatggatg agagagtgag ccatgatgcc atgatgaagg catcggtcaa acagttgttg 5040

FIG. 22K (cont'd)

```
gtagagcaat tatcccagtc tttaaaactg gatatgaatg agattcaccc tgacgaatcc 5100
tttgccgatt atggtgttga ttccattacc ggtgctagtt ttattcaaca gcttaatgac 5160
acgctgacac tgactttaaa gacggtgtgt ttgtttgatc acagctcggt aaaccgactg 5220
acggcctatc tgttatctga ctatggtgat gatatcgcgc agtggttagc aacggcacca 5280
gcgttggttg atcatccaca gagtgtcgtc agtcaggtgt tgcctgaaag gtcgccagca 5340
agcacacaag ccaagcccct gccttcagtc ccccccttcgt tatcgatgga gtcacccgtt 5400
caacaggagt cgatagcgat tattggtatg agcggacggt ttgcggcgtc agaaaacctg 5460
gaagcgtttt ggcaacagtt ggcacagggt gtggatttgg tcgaacccgc gtcacgttgg 5520
gggccacaag cggagactta ctacggcagt tttctcaagg atatggatca atttgatcct 5580
ctctttttta atctctccgg tgtggaagcg agttatatgg acccgcaaca acgttgtttt 5640
ctggaggaat cctggaatgc actggagaat gcgggttatg tgggtgatgg catagaaggc 5700
aagcgttgtg gtatttatgc cggttgcgtg tccggtgact acgcacaact gttgggcgac 5760
caaccccgc cccaggcttt ttggggcaat gccagttcta ttattcccgc ccggattgcc 5820
tattatttaa atcttcaggg ccctgctacc gcggtggata ctgcctgctc aagttctctg 5880
gtggcggtgc atttggcctg ccaggcccta cacctggatg aaatggagat ggccttggca 5940
ggaggtgtgt ctctttatcc aacccccatc attgtatgag tctttgcgtg gtgcagatat 6000
```

FIG. 22K (cont'd)

SEQ ID NO:30

```
ancaatttat nacatccncg ggaaaanacg aacggtcacc atntaggcag gcattgcggc 60
caacggttat tttttaaat gagttaacca aaaaagngtt tttgnagtgt aaattggttt 120
gncganggtt ggccttattt aananaggga ttgngtattc ttgaaaccca gggttatttc 180
ctaacagtgc aancggtact gaggcgtcgg ntttggttac gtgaatttcc gctccatgac 240
gctcgtgagt tgggtcaaca aatcatcctg gcaaccaacg cccatgcgaa cgttgtagcg 300
atcttgcgac atcggtgatt gatcatgccc ccaagagatt gccatccgcc gaggtcagca 360
tggataaaga gtagccatga tgccatgatg aaggcatcgg tcaaacagtt gttggtagag 420
caattatccc agtctttaaa actggatatg aatgagattc accctgacga atcctttgcc 480
gattatggtg ttgattccat taccggtgct agttttattc aacagcttaa tgacacgctg 540
acactgaytt kraagackkt gtgtttgctt gatcacagct cggtaaaccg actgacggcc 600
tatctgttat ctgactatgg tgatgatatc gcgcagtggt tagcaacggc accagcgttg 660
gttgatcatc cacagagtgt cgtcagtcag gtgttgcctg aaaggtcgcc agcaagcaca 720
caagccaagc ccttgccttc agtccccсct tcgttatcga tggagtcacc cgttcaacag 780
gagtcgatag cgattattgg tatgagcgga cggtttgcgg cgtcagaaaa cctggaagcg 840
ttttggcaac agttggcaca gggtgtggat ttggtcgaac ccgcgtcacg ttgggggcca 900
caagcggaga cttactacgg cagkttyctc aaggatatgg atcaatttga tcctctcttt 960
tttaatctct ccggtgtgga agcgagttat atggacccgc aacaacgttg ttttctggag 1020
gaatcctgga atgcactgga gaatgcgggt tatgtgggtg atggcataga aggcaagcgt 1080
tgtggtattt atgccggttg cgtgtccggt gactacgcac aactgttggg cgaccaaccc 1140
ccgccccagg ctttttgggg caatgccagt tctattattc ccgcccggat tgcctattat 1200
ttaaatcttc agggccctgc taccgcggtg gatactgcct gctcaagttc tctggtggcg 1260
gtgcatttgg cctgccaggc cctacacctg gatgaaatgg agatggcctt ggcaggaggt 1320
gtgtctcttt atccaacccc natcattgta tgagtctttg cgtggtgcag atatgctctc 1380
ttcgaggggg cgttgccaca ngctttgatg cctgtgccsa cggtatcgtc attkgtgaat 1440
gggtgggggk ggtgnggngc taaaacgctt gtcggcggca tttggccgga tggcnaatca 1500
tattcacgga gtgattgctg gcagtggtat caantcaaaa cggtcgtagt aamtgggaat 1560
acgggcaccc agtgcmcaaa tscaaagaac gcttggwaac gttgggttnt atgatcgctt 1620
tgdtgyyaac cttkagcaha tkagcatgkt cgaaggccvd tggacagggc acgrgdytta 1680
```

FIG. 22L

```
ggtgkacccc arttgaayrt daaacyttam acccggvggt ttagacactw adacgsaata 1740
aagaahaatd htgvgchatc gsgtcggcnc aaaaccaata tgggamacyg gsaccatggt 1800
wggctgggtd tgggggggctt gtkkgattrt kkaaagntgg tgttgtcgat gcaacaccgg 1860
caaaatacct ccatcgctac attttactca gggcaatccg aatattgact ttgatcgcag 1920
tccttttttat gtgaacaccg agcttcgtga ttggtcggtg ggtgaaggag agacccgttg 1980
tgcgacggtg agcgcctttg gatttagtgg taccaatgcc catgcagtga tagaagaagc 2040
gccgccagtc gtgcgccaac atgaagagca gccgggttat ttaagtggtc ttatcggcgc 2100
atagtgatga tcaattacgg cagcaaggtt gagaacttta tgcgggttat tgtgagcatc 2160
accctgagtt ggatgtgggc aartcytgag rttatacctt attgnttggg ntcgtcaaca 2220
ttggntcgca tcgtctggct ggtgntggcg tngtgatctt gaggatttgc ggcggtcact 2280
ggatcagtgg nttgggtcag ggtaaggctc cccgagtgta tgtngtctng canttggctg 2340
agggtgaacc acngtctanc aagtttctct acagcacgtt ggtaatgaat gtataagagc 2400
antgcagtga gtcctgttct gcgaatcact atgtggacgc gttatcgacg gtgggggawt 2460
tatatgttca gggttatcca ttggagtatg gtgtgttgtt tgsccakggc watrrwcktw 2520
ttsskttkcc gamctakssg tttscwarkc agcgttgttg ggtaccacaa acaataagcc 2580
actccacagt ggatgctata tcacagcatg ctttttttaca tcctttgtta catcgaaata 2640
cttcggactt ttcatgtcag cgttttagct ccacatttaa tgggagtgaa ttttttctta 2700
ctgaccacct tattctaggc aaaaagatat tgcccggagc cgmtymtttc gaaatggtcc 2760
gagaggccat caaacaagct tgtggatttt tggataattc tgaagttgtt attcagctca 2820
atgatattgt atggacaaaa gtgattgcag ttgatgatga tatcaaagaa gtacatattg 2880
atctttttg tagaaaatgg cagtgaatca tgcttaacgc atgagtttga taggcaaaac 2940
atatcgctta actatgaagt ttatacgcaa aatagtgagg gaaatggcag gcagaataaa 3000
aaaattattc ataatcacsg catggtcacc ttgagtttct ttgaatacaa ccggaggttg 3060
tagatcttga tgaactacsc mgccmctata aatcaascaa gtcttanatg ctgaacaaat 3120
gttatttggc gtttggaatc aatargtgtt cakwwtggtg acaggcmccg atgtatarat 3180
acsgtwtatw tcggtgagca tcaagtatta rcmaaactyt ytwtgccaga aattgcagga 3240
gawttggata artsctttgt tttgcaccca ggcatggtag attctgcttt acaggccaca 3300
ttgggtatta cttctgatat caatgatatc atgttagccg atcgccaagc cgattatatc 3360
```

FIG. 22L (cont'd)

```
ttgaccccca agtcgacgct tccctttgct ctkgwmaaas tkkaawtway ysgaaaaygt 3420
wcagattcta tgtgggtttg gattckaaat tctttatcga cagaccasaa gtctccacgc 3480
tcagcccgtt aatgatatac aacatctcga cattgatcta ttggacgctc aaggaaaagt 3540
atgtgtgcga atgcgaggtt tcttgtctcg ggttttgccc aaacaatggt taattcacta 3600
scagaagaac cgtttacagc tttgaataac cagcaagcac cnttactttt tccaatccca 3660
ggtatggcgt tncgccagac tcttatccaa gtggccaatt aaccctacct taawtgatgc 3720
ccggtccatc cttggggtgg ttgtacgnat ttgaaatatg gacttaatgt agaaaataga 3780
aggatgtaga ggtttattga ccttacactc ccaaaccact tggatttaca ggatcgctac 3840
ttgtgatatt tgcactgcag gtatttgaaa ttgtaaaang acgtaatgat agataaatcc 3900
gtacaaccag tactgattca gttgttagtt cctaatgatg gagaacaagg ggtattcacc 3960
agtttattgg cattactaaa ggtggctcgc tcagaaaacc ccaaagtgat tacacaatta 4020
attcaagtac aatagtcccg caaacctcgc aaaatttact acggattatc actgaaaata 4080
gtcatgatat aacacatgca gaaattcgtt atcacttggn atcaacgtga atgtttgktt 4140
tggkaascag tacccaaatc tacaaaaacy ttactcaact ccctggaaat ctaacagwgt 4200
ttatytcwtt mcgggaggka ccggtggaat tagcgtcaca gtttgtcaaa gcgwtagcag 4260
tgagtcccac aaaatcggta ttaatcttkg taggkcsktc accactcmat grtgaaaaga 4320
aatcttawtt aactagaact ggratccgtt gggggaccat tattaawtmc tatcaraacr 4380
gatgtaagcc aacanggatc aagttaaagc wttgwttaaa raaattkttc ascawtmcgg 4440
tcaattgaaw ggkgktttsy attgtgcagg tattgtcaac gacaatttta ttctcaaaaa 4500
gtcctcgaca gaatacaaag aggtattgtt gtntaaagta tcnggtnctg tcaatttaga 4560
ccaggcanca canagnatag agatggattt tcttatnnta ntaaaaacgt tatctgcagt 4620
attcggannn acagnacagg gtnttagata atngtccaaa tactttttcc aggtgttggg 4680
taaangggat tggaanccaa                                             4700
```

FIG. 22L (cont'd)

SEQ ID NO:31

```
gcncttnccg cggtggcggc cgctctagaa ctagtggatc ccccgggctg cagtattcgg 60
aaatgcaggt caatcagatt attcaacggc aaataaattt atggatgagt ttgcacgcta 120
tcgtaatgct ctggtcaatc gcaaagagcg ctatggttta acactatcga ttaattggcc 180
gtactggaga gaaggaggta tgagtattga ggaaaatttt gaaaatataa tgcaagagaa 240
taccggtatg tccgccctgg agacatcaca aggtattgaa gtattacaaa gagcttggca 300
gttgcagtac acgcaattgt tggtaatggt cggagagatg aagcgaatgg agagcttttt 360
gcacaagcag ggtttcgagc agattcctgt ggtatccgcc gatactgtca gcgagaataa 420
aacctcgact attgagaatc tttcagccga tgtagataca ttaccattca ttgaggttca 480
ggcatacaat atggaacaaa aaacccttga ttacttaaaa aatgtatttg ccaccacaac 540
acaaatcccc gagaaaaata tttatgttca tgaaacattg gataaatacg gagttgattc 600
attgttggtg atgaaaatga ccaatcaatt ggaaaaagta tttggaaaat tatctaaaac 660
cctatttttt gaatatcaaa ccattcgcga actgggcgat tatttcctga aatttcatga 720
tgaaaagtta agggagtttt ttcagataga tagcaaacta tctatgttaa ataatcacgg 780
agagattgaa gttcaaaaaa aaggggatga accatcggtt ggagacagat ataagtcagc 840
tggatgccgt gcctatctcg gtttatatcg cctgtgtcag cagtgaatca tcaaccaaaa 900
aaatgttaac aatggttccm atantcatca gccagtaatg ggatattggc gawtattggg 960
tctgagkggg tcgttattcc mcaagcctga gaaatatngg agggaatact ggggaagaaa 1020
tttgtgtcaa nggcaaggga ctggtattan cnggaaantt ccaaanggag ccgttgggga 1080
ttggsaagac tattwyacms mtnnngatcc stattcagcc mggtgggaca tcgcagtaaa 1140
tnggggkggt tttattcggg atgttgataa gttcgatccg ttatttttta atatttcccc 1200
tagkgrggkg gagctyrcts atcctcagga aykwttattt yctagrgtcc gcgtkggctg 1260
cattggaaga ccctggawat tgccgggnat tatttgcaaa tgttgtcatc aaggactaaa 1320
tcttcattct cgtcggraga tgttggtgtt tatgtggrag tratgtcttc agaatatcag 1380
ttgtttgctt ttgaacagaa wttacgtggt caccccatat cctcnggttg ggagttatgc 1440
cagtattgct amccsggtgt cttatgtttt aratctacac nggcccaasc atgacagtgg 1500
atmcgatgtg ktctarttcg ttaacgacgc twcacctagc atgkcaggga tttaaaactg 1560
ggkcgaaact gaccygggta ttgkcggkgg agttaawatt accattcacc ccmataaata 1620
tyaggcsctg agtcacgcyc aaattattty tactagtggt sgttgccaaa rttttggtga 1680
```

FIG. 22M

acagggacag ggttatatcc ctggtgaagg agtgggtgcc ataatactga agcgcttggt 1740
cgatgccgag cgtgacggtg atcatattta tggtgttgtt aaaggcagtg ccgttaacca 1800
tggtggtaaa accaacggct ataacgttcc taatccgaat gcacaacagc aagtggtgag 1860
tcgtgcacta cgagaagccg cagtaaaccc ccatcatgtg acttatattg aggcacatgg 1920
aacaggaacc caattgggtg acccgataga aattactgkt ctrammaaag cgttcaatag 1980
tttgaccaat gagcttggtt taagcgctgt gsccaaacma tygkgtttga tcggstcark 2040
gaagtcaaaa tatagggcat tgtgagycas caagccggtg ttgcagctat tagcaaagta 2100
ttgttacaaa tgcaacacgg gtcaaatagt cccttcttta cattcaaaag cattgaatcc 2160
caatattgat tttactgtga ctccctttgt agtaaaccaa gggttattgg actggaaacg 2220
acttgaagtt gaaggaaaga gggtrccgag aatkgctkky mwwwckkytt ttggggccgg 2280
tggctcaaat gcccatgtag tgattgagga gtacgttgcc agcaatgaaa agcaagagga 2340
ttttcaagga aaagtaatta tccctttatc ggcwatagac ttskgatcar ctacaaraaa 2400
warkggatcg tttgcttaag tttatcraaa aaaatgaagc aaaraggtag ggaawtksgc 2460
ttaattgwty ttgccgwawa cattgcaact tgggcgcgag gtcaatgara ggaacgtctg 2520
gncmttngan ttgtaggaat cnaataccaa atgcttaang gaaagatttt agcaaaggnt 2580
ttaaatactc agaaaatnga tgcacanatt tttcggatac ttatcaaaag rcatttatc 2640
ggggttcgta ctagacctgg gtgcgttgra tttcgctatt ttttctgaag atgaagaata 2700
tggccaacac gcttgatatt ttggattcaa aaaggtaaat actttaagnc tggcggagct 2760
ttgggtaaaa ggtgtgacta ttgattggaa taaatggtat aacgcattat taacccagaa 2820
taaatatttg aaaccntcgt cgtattagtt tgccnaacng tatccttttt ccagggatcg 2880
ttattggatt nccnaagtgc ttttccacaa ncaaacattt tctacagtaa ttgaggcaga 2940
cgccaaccma aacattgaat gagctactgt gttttgaaga aaaatggcag gtgcaatcgg 3000
aactacatga ctctgttgca gatcaatcta atgttatcaa tacattaatt tgtttttaa 3060
ctgagaaaga gcatcaaaaa gcattacaac aatcaatatc attccatagc ccgaaaacac 3120
gattgatttt tatcagccag gctcaggctt atgagcagta ttcatcagat cactatgcgg 3180
ttaatccaga aataggaaag acgtaccaac aggcttttca acacattgtg aaaagtattc 3240
ataaaagtga tgtcacggac ataatgtatt tatgggctct agaggatgaa cgctggatta 3300
cgtctcctct acctattgta tatcttttaa aaagtattga ggtttcttta ttaaaaccar 3360

FIG. 22M (cont'd)

```
aaaaattact atttgttgga gaatttaaga caagcttakc rrcgaytgty acyykraakc 3420
cwrgkkgggw ttygmamrwy ckkwaksgtt dgtgcaacsg ratwtkragg ttgcggtgtt 3480
attaraggcm rtggaaggta ctyaatccca tmcagtgaca aagcaaatgg atctttggat 3540
agaaaaattg tggtcgtcct taaaagccca aaaagttcat agtagcttat accaaaatgg 3600
tcgtagatat ttttctgaaa accccamccg ctgcaanctt gtcatgaacc aaagtattca 3660
aatgcttaca gggracttta ttgataacag stgsytgtgr aggactgggt tttgtcttyg 3720
cagattattt ttccaagaca tataaaatta atctgatatt ggttgggcgc tctgatcttg 3780
ataaagagaa agswwtcgsr ratwcrgrmt ykgkwwmaat caggtagtcg agtggcttat 3840
gttcagacgg atatctgcga tgaaaagaat ctccaattgg aattggatat tgcccaaaaa 3900
tattgtggcc ctattcaggg tgtcattcat gccgcgggca tcattgatca gaagacaatt 3960
tttgaaaaaa gtcctgaaaa ctttcaagca gtattagccc ntaaaattca gggtacattg 4020
attctggata acgtattgtc agcgcaatca ctggatttta tatgttactt ttcttcaagc 4080
tcggctctat taggtgatgc aggatcatgt gattatgcaa tggctaatcg atttttgatg 4140
gcccatgcac agtatagaaa tacctyggta tctgaargaa aamscaaggg raagacmctg 4200
kttwttcatt ggcccgcctg gaatgtgaaa ggaatgggat tgaatggact ggaatgagaa 4260
cgtgaaamca ragttctwty ttaagtccaa gcgggcaasg tctattggac ataaaggaag 4320
gttgtgaggt tattgaacac attrctggct caggattatt ytcagtgtcy tawattggst 4380
ggkaggaaaa accngtatcw aacaattttt tgggtctcac acaaagatgt ttctnacctc 4440
acaagtgagt caagggcagg magtrawgaa cwwasrrswk kmykkrrass ksyamyaaac 4500
gagctgagat agaagacttt aagtgttgaa gaatgtatta ttttggactt aaaaactctg 4560
attacagagc aacttaaaat acccatcagc tcatctggat gtagagagta atttagcaga 4620
ttttggtttt gattcggtca gtttagcaaa cttttcccgt gstttaagta ttcmctatca 4680
ttycaawawt acgccrtstk tatttttcgg atatcctacc atagagcgty taarccgtta 4740
ttttttaaaa gaacmcmctg cgsttatgga ggcgttttat cagcagaaaa aaacatytwa 4800
tagtaacaat acvctgtccg ntatagtccy tcatgtcaaa gaaaagccgw caactgatct 4860
aatatcatcc arcngcctct nccttttatt gcagatccat tgccccctca ggstattgag 4920
agtattgatg agcctattgc cattattggt atgagtggtc gttttccaga agcgcgtacg 4980
gnttaaagca atgtgggaga ttttatccga aggtaaaagt sytgtgcagg agattcctat 5040
```

FIG. 22M (cont'd)

```
agagcgcttt anattggcat gaatattatg aacacccatc ggatgatgtt ygaanaandb 5100
taatagtaaa tggagygcct gcattcctgg tattaaagaa ttcgatccac aatttttcga 5160
aatttctcca agagaggcaa aaaarctgga ccctcttcaa cggcwcttat cacaggaatc 5220
mtsgaatgca ttggwaaats ctgcttatgk wwwmywacrc wkwgmtmwtw aracratggg 5280
atayktkkat tggtrttgaw smaggktwtt atmmrrrymw gmtcaatkmr gwygacsgca 5340
cacwttwawc catmakrmta ttttrgcata ccmgtytgsc agtwytywtt arakyttaat 5400
ggscmwrssa tggcwrtwaa wrccgcwtgy tcctccgsyw tggyygcrmt tcaccamgct 5460
kscsysagtt tackwcarca agcaatkyga wrcgsckawk gwcscggcag cwwwyttrmw 5520
mwwyacrssk sawswtkaws tggscwtgay ssawgsgrgy mtgakmysac mwgawgsyat 5580
amygawakac ckarnrtcam csygccaaks gcryagtgmy tggakagsmw gytgwtgcar 5640
tcgtaytgma acrwmtcttk sgggktttcc aaaaggggtt mmaaat                5686
```

FIG. 22M (cont'd)

gngatgagat tgatgagaat acttaatttg gtcgaanagg ccattacntc tatgattctt 60 *SEQID NO:32*
ggtgaattta taagccaatt aaccngtgat ttagtttgga atatgaaaga acccgtttta 120
tttgactatc ngaatattaa tactttatcg aatatgatcg agaatgaact cgaagctgtt 180
gaggtatagt tatgttagaa gttattaata gatactgcca tggatacgta ttcgtgccag 240
tggtattggc cntagaagaa aaagggtttt ttgacctttt tacaaggaat agatacctta 300
catttgaaaa aataaaaaca gaattaaatg ctaatagtgg ccatcttcaa gtagccttac 360
gcatgttgca gtctgtttca tggatatcat gtgatgataa agggtatgta ctaacagatg 420
cagcggacga aagaaataaa atatctagtg attttataga gctttttaat ttctctatga 480
gtcgctattt agaaaatatg gaaaggcatg gattaaaaaa atggatagat caatccggag 540
ataactgggg tatttcaaac cctgtattaa ccgatttttt ggatggtgtt ttaattattc 600
ccttattact agaactgaag gaaaatggtt attttgatgc gttaaaaaat gkwaatagtc 660
taaataaaaa attattttta ggntgatatc gaacaatcgg nttcgcaawg aaattattac 720
actattttaa acaaaagaac tggctccaag aagaatraag agacgtttta cttcacaaaa 780
ntctggtcaa tttnaycact caacgaattt ttattaccgc aatccattgc ttcttataag 840
cccatgttta tctcgggata acggaattaa tgtttggtaa tgctaggagt atttttaaaa 900
agggattgca tggagaggag agccatgttg accgaacctt aaatgttatt ggtagtggtt 960
ttcaacatca aaagtacttc gctgatatcg aagcgttagt cattcagtta tttaatgata 1020
mtttktacga tsraywsccg aaatrkrtts crratatggg ttgtggtgat gggactctac 1080
taaaaaatat ttacaatatt atcaaggaaa aatctgcacg aggaaacgtg ttgaatcact 1140
atcccgtggt acttattggt attgattata atgaagccgc tttgcaggaa actaacaata 1200
cactggcagg tgttgataca agacactatg ttttaaaagg cgatattggt gatcctgaag 1260
gaatgataag tgatctatat gatttaggta ttaaagatcc tgagaatata ttgcatgtgc 1320
gttcatttct ggatcatgat cgtccttata ttgcacccac agaggtgatg aatattgaag 1380
cacgttcaaa gatatttgat cagggcgtgt atgttgattc agaaggtcaa gcaatatcgc 1440
ctgtggttat gatacaaagt ctggtggaac attttaaacg ctggtcttgt gtaaagacga 1500
aacatggctt gcttatatta gaagtacatt ctcttaaccc tgaggttgtc aaccaatatt 1560
tggatgaaag tgaaagtttg cattttgatg cctatcatgg tttttcctct caatatttag 1620
tatcggctga ggattttcta atatgtgctg cagaagctgg tttattttct aaacctgatg 1680

FIG. 22N

```
tttctcaaaa ttatccaagg aacttacctt ttactcgaat taccctaaat ttttttgaaa 1740
aaaagcctta tcaaattcgt cacccgaatg aaaatgattt gtctgcattg atggatttag 1800
aaaaaatttg tcgacctaat aatcaatgtt tatgcattga tgaccttcgc caacgcatag 1860
atgaataccc aaaaggtcaa tgtgttttag aattaaacaa taccattgtt gcagtgattt 1920
attcacaaaa gtgtattaat agagtgttag gcactgctgc aggtgtttgg carswswwtg 1980
scmdhggaat rtgbdwdcac datttvtaba thactbgttt atcaatdtaw trcccaaaat 2040
aaaaaaagaa tatgccatmc aattattaca gtttatcttc tatytatcat ggtgttcawa 2100
atgatgttga agatgttatk ggtattgatg aatgttatca gtgcttaaat gagaaaacga 2160
tacaagcagg cagttttatg gaaagtgagt cagttgatgt tttatattcc aagagtagaa 2220
aaacatattg ctaagtatcc caatagatat tggagtaaat gctctggatg cagagcagga 2280
aatggggttg tttggtgcta agtggttact atctattttt caaagccaag gagtgatgaa 2340
aaaatcaggt gagtattatc aaaaagatca attngaggtt gatgttaaat attattccaa 2400
aatattatcg attatttgag tgcttgctac tcatatttng aaaaaagaaa gcttatttca 2460
attcaaaaaa atacnggtgc aaacactttc caatattgat gaatttgctc ttaacgatcc 2520
attggtntga gtttgcttcg tnttaagcgt acgttttcct ctcaatatgc tagccttatg 2580
ccgwttctac gattaatggc atcgtgcctt tctcggtatt tggaaatatt aacaggcaaa 2640
atacaggcgc atgacattat ttttccagaa nggagggatg aatttatttg aaggtatttt 2700
taaaggctat caactttcag actattttaa tcatattctc gcagagctga tttatgaaag 2760
ggctanacgc tctatccggt gggtaatatg aantaaaaca attcgtattt tagaaataag 2820
gagcaggtac ctggtggtgc caacagagtt tgtattngaa tagnagcttc mccgctnctc 2880
gaatggttat aagagtttta cntatactgg atatctncgt ccntcgttcc ttcgttatgg 2940
gagaaaagtn agattttycc gataaatatn ccctggtntg caatataagg tgttagatat 3000
ntgaaagnca atttagantg cacaagggtt ttaccctgat agctttgata ttngtgtatg 3060
catctaatgt tnctccacga tacgaaawta tatacagtat acccttccc aaagtgagtc 3120
acatgctaac gcaaaatggc nttgttaatg ttgaatgaan tttactcngg atgaanggat 3180
ttgttactgt ttaccggtgg tttgttagat ggcctttggt tatatgaaga ccctaccaat 3240
cgattggata atgtctgctt gttaaatgtt gatcagtggc gatctatatt atttaaatca 3300
ggctttnaaa aatgttaaag actttgtttt acctttgaa aaacttaata ttgagcaaag 3360
```

FIG. 22N (cont'd)

tcaaagtatt attgtctctg agtggattaa tgaagacctg tctagtaatg nttgaaaatg 3420
tggtgaaaaa taatcanttg tttnagaaat acaaaatcac tcntgatncc gattactngt 3480
ggagnaataa aattagntta caattnaaaa gacaantcmc wtcgttanca caatagtatt 3540
ggaagaaaat atttttataa aatttagng gggataaaaa gaaaattatn ggatttttct 3600
ccntaaacgc ccctttgatt ggagtttatg ggttggattc atattcgaac ctacnttgga 3660
anttaaagat cattactcgg kragcmttyt tcyataaaac trgaasmtac tttkktmtky 3720
mawkatkraa yrmtksckkm rsctmtytgw kwcmtccsay atsattcmag wtrascytsr 3780
wattrtcgmt arakwcccta ttacggaaga gataatgact ggaggtacgt caagggtaar 3840
aacagggcaa tcgaatsaka atgaacctat tgcgattatt ggtatgtcyt gtttatttcc 3900
aggtgaggtt acgacagttg atgagttctg ggaattatta atacaagaaa gacatgccrt 3960
tcaaccctta cctaagggac gttggcaatg gccakaaggt gttgatccat cgggagcaca 4020
acttggcatt gatcagggtg gatttctgga tggtattgat acctttgatg ccsacttctt 4080
tcgtatatcg agaaaagaag cggagttwat ggaccctcas caaagaaaac tacctggaat 4140
taarttggca ggtcatasag catgccggat ataaacccat cggytttttc tggtcaaaga 4200
natyggyatc tatgtggggt gctttgtcac cggtaattta tatgggagtt atttaactaa 4260
aagtgaccaa angccctaaa aaccaaccgg naaggcctat ttkcatgacc argtartana 4320
ttgttgttcg tytttmcccc aataanaatt ttcctatttt ntattaattt tttaaargtg 4380
cccmscstcc tctwtctgat wccgngcttg ttcaaryagt tttaggttgc ctwtttgacc 4440
caancarttt tatgcgnatt caattcgggg nanggngtga atcaggcntc tggtgggntg 4500
gggaycaatt waatrtcccc tccsmrtgaw accggtttct tnattayywa gcaggtntgt 4560
tntcaaaatc ngggaatgta aacctttnga tccaccgccc gttggttttn tncctgggna 4620
aagggggcgc tnttcttttt ttnaatcntt ttctcanccc nattttaaaa ngattgtttt 4680
ttnggggttt taaagggggg agatnaaaat ngggggcaan cattnnttac ggccctaacc 4740
tnng 4744

FIG. 22N (cont'd)

gangattcct nccnctnccc attgaaaaga ggatggattn gancatatgg gtgtgcctgc 60 *SEQID NO:33*
aagaagataa gtcaatataa tgtaactcag aaaaatcaat tcccaaaatg aataccccnc 120
aatcwataca aaaaawattg awagattttt kggtkgacat tactaacttt ttsgaggcna 180
agacatcmat ccmrgcmgga tgcctggtga ctatggtgkt gattccatta ttaggtatga 240
gatttyttaa tcgaattaac cyccaccttt aawatagaag ctgatgcttt attactaaca 300
gaaggaacga ttmaccagta tatctcataa arkwcmttct tttattgttg ataaaaaaaa 360
ttacccaatg ttaccaaatt ttggattaga aaatgattct aataaagaaa ataaaggctg 420
ggtaaagcct tcttttattg aatttattaa atttgaaatc aatcctgaat atatagaaag 480
cagtacaaaa aataaagatt acgcgattct tgaaaatcta ataaataatg gagttggagt 540
ttggagagaa aataatcatc tatgttttga gttttttttat gaaactcata caaatgaaac 600
aattaaaaaa atagtgtttt cacccgaaat acttttttaac tctctagata aaggtaaacg 660
atactttcca agtagctgcc agcaaaaaaa cagtctatat caaacggaag ttgagaagtt 720
tccatataat cttattcaag gatttagagt ggaaatgcca gtcaatattg aaattttaaa 780
taaagcattt aatcatttgg ttaacacata ttcaattttc agaacaaaag caatgttgat 840
caataagcaa tggattcagg taatacatga tggtttatca gtaagatgcg aaganaatta 900
yatacgaagg attatctgca ggaaaaagat tttacgcaac aactaatnag tatttcaaaa 960
agagcaaggt aaaaaattat ttgatatcga taatctgcct ttattaaaaa tttattttat 1020
ccataatggt aaagacttag cagctatttt tgttcatgcg catcattttt gtgccgatgg 1080
atttacattt ttttcttttc agaaagaatt tcatgatact trtgaaagta ttatraacgg 1140
antggrrwat ccggaaacgk gttcsawaaa gtgatggctg aatatggcca ctttgcattg 1200
tgtgaatata atcccaaaaa caaggagctg acaaaaaact ggcttgataa aattcgagat 1260
aaaaattttt ctttaaaatt taaagataag aaagactatg tcggtcaact gtcaagtgga 1320
gaaaaaatta ttgagctaga agtttctgta aatatgctgg aaaaattaag attatttaat 1380
gatgcgaata ataccacact gacgcaattg ctatgttgtg ctgttgcaat tttactgtat 1440
cgcctctcga ggctaccagt acccttgcaa atggtcaaca gccgtagaga taaaatagaa 1500
tttgaaataa tgatgggtga ttttgcatca actctgccct atggatttta ggaacctttc 1560
caaaagcatt ttctctattc cnggatggta ccttttttaa gttattggaa aaanggaaaa 1620
aggcnttnaa ttntcccccc naggattttt taaanggggt ttggatnntt tntcngggaa 1680

FIG. 220

```
ccctcaanaa aaaaaaaatt tntttccaaa aaaaaaaggg gccccttaaa ntccccatta 1740
agggaatttt ttaaattttt taatttcccg ggnaaaatta tttntttaaa ttccggaatt 1800
aaggccnaan tggaattaat tggnaaaatt tccantttgg gtttttaaaa aggggaaaaa 1860
ncccannaat ttgggtttcc ttaaaaanaa aaaaaagggg ggnggccccc cggtgggttc 1920
nttnntgggg gnaaaaattt aaaaatttaa tttn                           1954
```

FIG. 220 (cont'd)

anccgaaaaa naccnaaagg gnngccggcc cntgtcctnc gagtgcatna taaaaaancc 60 *SEQID NO:34*
agtnataagn nggnnacaat antcatgccc cgcgcccncc gnaagnaacc tnantgggtt 120
naaggcttca agggcatcgg tcaaggaacc tttcggcggg cttttgctgt gcgacaggct 180
cacgtntaaa aaggaaataa atcatgggtc ataaaattat cacgttgtcc gggcgcggcg 240
acgaatgttc tgtatgcgct gtttttccgt ggcgcgttgc tgtctggtga tctgccttct 300
aaatctggca cagccgaatt gcgcgagctt ggttttgctg aaaccagaca cacagcaact 360
gaataccaga aagaaaatca ctttaccttt ctgacatcag aagggcagaa atttgccgtt 420
gaacacctgg tcaatacgcg ttttggtgag cagcaatatt gcgcttcgat gacgcttggc 480
gttgagattg atacctctgc tgcacaaaag gcaatcgacg agctgsrcym scrmaktygk 540
gmcmccgkmw cctwmrarst twttcscaaw rragkktywt tmawmaagsm cscygskrky 600
gswwwtggwr ctawccacgm arcssmwwty gaaamaccks rkcyggntkw csrawawmwa 660
cmrsmycasc cttggwawmm armrwsmtga syywgckcwg aamaakgtwa ccstcrgkgc 720
cgmtwwgkkc aawkttwmac cysrwrwwrr ymcmaamatt garrcsttgm ycgraaccsc 780
gmtgaaaaan ncgctghntg nnaatgtrvg gcgtntggat gtchcaaagc aaatggcasc 840
agacaangaa agcgatggat gaactnnngg cttccttatg tccgcccggc caktcatgat 900
ggaatgtttc ccccsggtgg tgttatctgg caccagtgcc gtcgatagnt antgcnaant 960
tngantaant tnattnatca tttngncggg ntcctttncc ggncgatccn gccttgttta 1020
cggggcggcg acctcgncgg gttttcgcta tttatgaaaa ttttccggtt taaggcgttt 1080
ccgttcttct tcgtcataac ttaatgtttt tatttaaaat accctctgaa aagaaaggaa 1140
acgacaggtg ctgaaagcga gctttttggc ctctgtcgtt tcctttctct gtttttgtcc 1200
cgtggaatga acaatggaag tcaacaaaaa gcagagctta tcgatgataa gcggtcaaac 1260
atgagaattc gcggccgcat aatacgactc actataggga tcatatttat ggtgttatta 1320
aagggagtgc catcaatcat ggtggcaaaa ccaatggcta tagtgtgcct aatccggata 1380
agcaacagcg tgtcattagt gaggctttgc agcgggctca aatagctcct catcaagtca 1440
gttatgtaga agcgcatggt gcgggaagcc gtttaggcga cccaatagaa attacggctc 1500
tcagcaaagc atttaacaat gttagtgcgc aatttaatgt gaaaagtgca gccaatcaat 1560
cgtgttttat tggctcggta aaatccaata taggaaactg tgaatctgca gcagggacnt 1620
gccagtatta gcaaagtatt gctacaaatg aaacatgggc aaatagtgcc gtccttgcat 1680
tcaaaagaac tgaatcccaa tattgatttt tcagcaactc cctttgtggt taaccaagaa 1740

FIG. 22P

```
ctgcgcgatt ggcagagacc gctgattgat ggaaaaacag tgccgagagt tgcgggtgtc 1800
ttttcatttg gggcaggtgg ttccaatngc nttacgtggt gattgaagag tatattgcga 1860
agataccgac aaataacacc agggaatcta taaaccatag gtctattatt ccattatcag 1920
cacgaactgc tgagcagttg cggcaaattg ccagtagatt gctggcattt attgaaaaga 1980
acaagcaaga cagcgtggtt acccccttaa tagatattgc ttatacattg caggtaggac 2040
gcgaagcaat ggatgaacgc ttggggttta ttgtgagttc aacccgatga attagtcgaa 2100
gaactacgaa gatatcttca aacacacgat gatatggaag agctttatcg aggtcaggtt 2160
aatcgatatg aagacacctt tcttactatg gcggctggat ggaagatctc tcttgaggct 2220
atcccaccca tttgggatta aaaaacgaaa aactggtctt aagtttaatg ccaattattt 2280
gggatttaaa aggggtcttt gtggatttaa wttkgggrkr agwtatassw tkkyttmcca 2340
aargrkgwtw ktccycsgcr matkarmkka ytacctrtcc yttyggcrgs matattttta 2400
rgwtkktamm swtyrnmccc tcwtwcctyt ttktgrcccc agggnccaaa tttatttttng 2460
tttgngggga atttngtttt aaaaaagaat tcggttaanc ccacctnccn ttaaactttc 2520
attttggggg gnaatgggtt ttattggnaa cccattccna aaaccaaaaa ngggcctttt 2580
ttttttccat tccnaaaaaa accaaatttt ggccccttt ttgggggggg gaaaaaaaaa 2640
acccnaangg ggaaaaattn tttttaaaaa aa                              2672
```

FIG. 22P (cont'd)

SEQ ID NO:35

```
nnnannttc cnattccctt gggcggaaat tttttgccca gggnccgnat aaccaaagga 60
cccttttcn ggccccttaa aaaaacccaa tttnccccnt ttaatccccc cgaataaaag 120
aacctttccc aaaaaaaggg naanttgaan tggggggnan cntgggaaat cccaagccaa 180
aaaaaggccc aaymtcgccc waraacrkkc cawwaatsss gawaasmcyy ccagawarwa 240
ttkwtkrrwa mwrawcyagy wwmscamatc rgrtgttwta tggrrsssrg wmyawwtraa 300
aarymytcca wyktkttkss grrtcaatka tgssrkwtyy tcaaymttgg gactcmcyym 360
tcmmmwwttt gaaaaccmyw attatakktr taagsgggcc aaataatcaa tgttggatat 420
ggttaamccg ataaaaaaaa gcctcaataa attttnctgc caacaactaa gacagctcta 480
caataaacat aaaagcaata atgagtccct gtgattattt cccatgaaaa aaacaatggc 540
attttaatag atagatctca tactgaatcg aatattgcca ttataggtat atcagggtgt 600
tttccggatg caaaaaatgt taatgaattt tgggaaaatt taaaaaatgc tcgtcatagt 660
gttaaagaaa ttccctataa ccggtcttgg gatattgata attactttga tacttcttcg 720
caaacacatg cacaggaata tgttaaacaa ggagcatttt tagaaaatat cgatcttttt 780
gatccgctgt tttttaatat ttctccggtg gaagcagagc ttatggatcc aactgaacga 840
tttttccttc aggaatcctg gaaagcgatt ganangatgc tggttatgat gcatcaaact 900
ntaagtggaa aacgntntgg ggggtatttg cctgtgcaaa gggagactac catgccatta 960
ttcacaagca ggataaaact cgtatcatga ccactgactc tatgcctcct gccaggtttg 1020
cttatttatt gaatttgnnt tagggcctgc agttcacgtt gatancnggc ttgttcatcn 1080
gtctttggca gcaattgctt acgcatgtga tagcctcatt cttagaaatt gtgatgttgc 1140
cattgcagga ggtggaaata tcaactcaac tcccagcctt ttgatcagtt caagtcaact 1200
tggtttgttg tcaaaagatg gccgatgtta tgccttsdat caacgtgcaa acggaacggt 1260
attaggggag gcggtascat cgattatttt aaaaccctta caacaagcga ttgacgatgg 1320
tgatcaggtc tacggattaa ttaagggttg gggaatgaat caaratggaa aaaccaatgg 1380
tmttactgct cctagtgtta agtcacaaat tcakttggaa acggatgttt atcaaaaatt 1440
tatgatwaat cctgaacata ttackatggt tsmagcccat ggaactggga ctaaactasg 1500
agatcccatt gaggytcagg cattamcaga agcttttcas aaatatacty aaaaaacakg 1560
gtmttgtgca ctagngttct ttraaaarwa aatattggac atacnttttt cccgctgctg 1620
graktckcta gatgttaatm aagggttttg ttgtccattt cwcancatty acmargwttc 1680
```

FIG. 22Q

```
yytycrtart twwtaattyw maarstatna mttwttcaww attcctatyg tnaawwaccc 1740
ywattttkkw ktaaaamcag cycatwwttw wyysssskgtm attwwnyycc nctttwttrw 1800
wmcccmmytt gcgrrcsgtt tttttcgtkk ktgtttcrwc akagaatctm mmsyccttttt 1860
ytygcmmmma anmrnnttaa acmmmtwrcc tttytttrgr kggsgycccc cncccngggg 1920
gaanccccca antgggtccc cnnttttggg gggggggntt tngnnaangn aaaatttttt 1980
tttcatgccc nnanaaaagg tccttccgca accttttta aaaaataanc ccntccccna 2040
aaaanttggg natttgggan tgggaattaa aaaggcccct tttttacccc cccgngttta 2100
attttaattc ccccctttttt tggttccggg cc                               2132
```

FIG. 22Q (cont'd)

nnaccaattt tccgaaaccc aagncatttt gaaaggggtt tttggggccc ggggttgaaa 60 *SEQID NO:36*
aaaaaaangg ggtttttttgg ccccccccccc nnagnaanta aaaatgggta aggaacncgc 120
ccccccactt tggaaaacct tccccnaaaa aaaataaaaa ggcntttgga atttttttaac 180
naaaatnncg ggggntgggc cntttaaana acccccccnt ttncaaaaaa tgcgarrggk 240
gggyctccwr rnaytyyaaw awgramgsgk tawytmccwa ktgrggggwn ttwtatcawt 300
aaaggnssgg ggktytawkw tttawraarr ggragcttta graawawaaw arwcmgtkgk 360
ktttaaraga rattkwwaar rraactggrw traaktwwww rwrttatwat anaaatrkkw 420
aakggwwrta tagagggaaa aaaatttaaa ggataaatga argaaaccca tcwccattta 480
ttttccaaga sgaccaaaga aatgatagaa gttgttaaat ttatggrtgc gtaaaaagaa 540
attttcccaa awttttaawt yctttgggtt aaaggattaa acmcttgrtt ggaagcaatt 600
atatggtaaa gaacmtccag ctcgtattag tttgccawgc tatccttttg ccaaagagcg 660
gttattggtt ggatactgat aagttagtcg acggtagtta tytcaaccct agrcaagagg 720
gaatwaatac agatagtgat aagtttgatg aaaagcttta tgaatccttg ttggacaatc 780
ttttttccaa aactatgacm cctgatgaag ctattaagtt aatggaagag gaggtatcat 840
gaaaaaatta attaaattga tttatgaaaa agtttttgaa aataaactat caaaatcaga 900
agccttgtcg ttgattagtg gattgaaggc gagcaatact actatccttc atccccttat 960
acatgaaaac acgtcaagtt tttttgaaaa aaaattcagt tcaacttttt ctggtagaga 1020
atttttcttt cggatagatg ctaaccttaa aaaaagtgta ttatctcctg taacatacct 1080
tgaaatggtt tatgctgcag caacaaaggc aatggctggt gagaaatttt cagcgcaatn 1140
ttaaaaaaat tgagtggcaa tatccagcta ttgttcatga agagtcgata acagttcata 1200
ttcgtttttt taaagatcca aatacctggt tggatacaag tgaggagaaa tttttatgct 1260
atcaaattta cacaatttca aataatcaag aaacanangc gatattgttc acaaccgggg 1320
tgtaatagat tatgatcata aaaatagtga attaagtcca cttgatattt tttcactaca 1380
aaagcatatc agtgaatatt ttctagaccc taaagaggat agtgattttt ttgaaaagag 1440
cgataaaagt aatgagccct attatcagag tattgaattg ttacatatta attttcagaa 1500
agaagcgctt ataaaattat cgtttgatca cgtatcagga tacatataac catcaagagt 1560
cattggtttt acatccagat atactggagt tggctttaca atcctgtagc ttcttatgcc 1620
ttgatatggc agatactgga atctgagttt ttcgggggag ttgcagccca gtgagtggta 1680
gatgctttta tcaaatncat gtctcggctg gtccagggac ctcaaatggt gggktttggg 1740

FIG. 22R

```
ttaccggctt aacarsyttc catggaaggg tagggnttaw atagscrcan tatttggccy 1800
tkggtgrtgg aatrawrgtw atkcskgggg wccwgstamw wagggttggg ttytcaaaac 1860
cawawraamm skgtttyttg rrkwwttttt tssmmmmgcc scnaaattng aacccccnn 1920
ngngtaaanc cccnngaaat tnntnttttt tttttncccc gnnccccaan cnnagaaang 1980
aacctttncg nggttttggg caattaaatt taattagggc aaaccccccn ttaatnggaa 2040
gggggngncca nttgggnggt ttttttngga aaaaggaagg gnaaattggg gnnaaaaagg 2100
ccccccccaaa nttnggtttt aaaaagggga aaaaaaaatn aaccgtttaa aaaaattnnc 2160
ccccaaant                                                        2169
```

FIG. 22R (cont'd)

SEQ ID NO:37

```
gcaccgttgg aacgttatgg catcgattca ttgattgtga ttcaggtgaa tcaggcgttg 60
gcggctattt ttgatgcgct gcctaaaaca ctgttatttg aatatcaaac gatagacgcg 120
gtcgtggctt acttggttga gcagcaccgc caggcatgta gggtgtggac ggggttaacg 180
gcaacgggtc aagctcaaag agagggtgtc atctcctcta cctcatcagc gggtgttgaa 240
cctgtgacac cgagacagaa agagggtcat cctatacaga aagacatcaa gtgccgagaa 300
cacccagtga cagacgagcc tatagccatt attggtctga gtggacatta tccgcaagcg 360
aatagtttgg atgcgtattg ggaaaacttg aaggcaggaa aagattgtat tcgtgaaatt 420
cccgatgacc gttggtcgct agacggtttt ttccatgaag atgttgaaga agcgattgcg 480
caagggaaaa gttacagtaa atggggcggt tttttagagg gatttgctga ttttgaccct 540
ctctttttta acctatcgcc gcgagaggtg atgacgatcg atccacagga gcgtttgttt 600
ttacagagtg cgtgggaagc tgtggaggat gccggttatc gcgtgctcag cttgcttcgc 660
agtttaacaa gcgtgtgggt gtatttgcgg gtattaccaa gacgggtttt gatttttatg 720
gaatacaatc ggatcsagct sbtytnycgc wtnatacttc ctnttackcc aggtttaaaa 780
rgccwmgwtc agctntkttt tsgggttttt taabthhgcg ggkgggtktt ttkvsccvwa 840
tnagcancsg dcggttttttk matttttttta wtggraanac nncaatcggg atcaacntct 900
ttntccgctt atacttcctt tagctcagtg gnnctnaatc gtgtgtcttt atttttttggg 960
tttacaaggc ccaagtcntg tnctattgat accatgtgct cctcatcttt gacggcaata 1020
catgaagcct gcgagcatct gcatcgccaa cgatgtgaac tggctattgc gggggggagtg 1080
aatctttatt tgncaccctt caacctatat tagattgtgt actttacgga tgctttccaa 1140
agagggcctg tgcaaaagct ttggttatgg tggtaatggg tttgtaccgg gagnaggggg 1200
ttggcgctgt gttgttgaaa cccttgnntc tagagccatt caggatcagg atagtatata 1260
tgccattatt agagggagtt gtgttaatca tggtggcaaa accaatggtt atactgtgcc 1320
taatccacat tctcanaggc gatcttantt cgtgaagctt tggantaaag ctcangngtt 1380
aantgcccgt atnggtcagt tatatagaag ccncatggta canggtacag agttgggtga 1440
ccncaataga ggtaagaggc ttaacgcaag ccttntcaac aagatactga tgatgttggt 1500
ttttgtgtat ntggngttca gttaaatcta natattggtc atcntggaag ctgccgctgg 1560
tatcgctggg ctgagcanaa gttattctgc agatgaagta tgaaaaaata gtggcaagcc 1620
tacatgcaga aagactgaat gccaatataa attttgaaca aactcctttt gttgttcagc 1680
aatcacttaa tgaatgggaa agaccaaacc ttcatgttaa tggaaaaatc aaagaatatc 1740
```

FIG. 22S

```
ctaggaccgc ggggatctct tcttttggtg cgggagggac gaatgcacat ataataatac 1800
aggagtatat tccagaagtc agtcagacac gacaatcaga ggtcaggaat aaaccagctc 1860
acccggtggc cattctgcta tctgcgcata cttccgctca gttactgaag atggccgagg 1920
cacttttact atttattcgt accatagtga ataatatgga ctcatcctat tcggcagggg 1980
atgagatgac tcacttggta aatgtagcct atacattaca ggttggacgt gaagctatgc 2040
aggaacgcct ggggtttgtt gtgaattccc tgagtgatat tgaagtgaaa ctacaaaaat 2100
ttattgataa ggaaaatgat attgaagact tttatcggga tcaaatcaag actaaaaaag 2160
aaatctcagc tctatttaat tcggatgaag atttgcagga agtgattaaa caatggatgc 2220
gacaaaaaaa actatccagg cttttgtcac tttgggttaa gggagttcac tgtgattgga 2280
acttcttgta tcaacatatg cgaaccaaac cttatcggtt acatttacca acgtacccat 2340
ttgcttataa tcgatattgg attgatgata ataataaaaa tcaatcgact gtagttgaaa 2400
aaaccaacac tattattaaa gagagaaaag agcaagttag attagagccg cttgatttta 2460
tggaaaggaa aaaacttaat gtccatgaaa aaaagccatt tcattgttct ttatcaactc 2520
aatcagaggc ctggtccggg gcgaacactc agacatccag tggtaaacaa agacgatctt 2580
atgtacaggt gcttaaacaa gacgatatat taagggatct taaatcagcg ctgcctacag 2640
ctgttgaagg tatgatacca acattaaatc gaactggtgt catgacagaa agcttaagct 2700
cctactcaga agcatttgca aactatgctg gtatgtgtgg tggagaagta ttggacttgg 2760
ggtgtgccta tggaattgca acgattgcag cgttggagcg aggggctcaa gtattagccg 2820
tagatatgga ggcacagcat ctggaaatat tatcagaccg tattcgggat gaagtgaagt 2880
cgcgtttatc gacacaagta ggcaagttgc tggatcttca ttttgatcaa gaacgttttg 2940
ctgcgatcca tgcgagccga gtgctacact ttttaaaccc acaggatttc cagcaagcat 3000
tacaaaaaat gtatggctgg ttaaaacccg gaggaaaatt atttattgtg acggataccc 3060
cttatatggg ttattgggcg agcaaagcag gggtttatga aactcgtaaa gcagcagggg 3120
atttatggcc aggctacata gataatgttg gttctcactt taatactaaa gagatagaag 3180
gggccccaac tctgatcaac ccgatggacc cggaaatact gcatcgtgaa tgcaaaaaat 3240
ttggttttca tgtagaagag actgtttttt ttgcaggaga agcctttgca ctaaataata 3300
gtttagaaaa atcaggtaga gagcatgttg gtataatagc attgaagccg gaattggaag 3360
attccgacag gcttgagaaa tcgctattgc cagtacggaa aactgaaacg gagaataagg 3420
aaattagcct actgcaaata cagacaatgc ttagggagag tcttgaattt gaattggata 3480
```

FIG. 22S (cont'd)

```
tagagcccgg tatgttggat gagttaaaac cttttacaga tttagggttg gactcgataa 3540
atggagtcac ctggatacga aaaatcaata gtcactatgg attatctatg actgcgacga 3600
aagtatatga ttacccaaat attattgagt tggcagagtt tttaagaaaa caaattattt 3660
cgaatgatga aaagcagcat caaccatcta tatcaacaat atttcccact tcattggatg 3720
aattattgaa aaaaatacaa gaaggtactt tagggattga agaagccgac caattaattg 3780
atgaactacc tgattaccat ctagatatgg aactccatga gttgttataa gggaaagcga 3840
ggtatttttg tgtcacaccg atggatggta aaaccatttt ggctgaaaag aatttagctc 3900
aaatcggcgc agctttgctg cgtccgagtg atttgacttg ttatggtgaa ctcaactatg 3960
cttgtacggc atttccttac ataagtaggt gaaaaatgga aacaattagt gtaaaccaat 4020
ttagagacaa tttgaaaagt tttgtagaac aagcagttag cacgcatgag ccaattaaag 4080
taacgcgcag agccagtgag gctttcgtcg tgataagtgc cgatgattgg gagcaagaac 4140
aggaaagcct ttatattttt cagaatagtg atttgatgca acaaattgca gattcgcttg 4200
gtacgcatac tcagggcaag ggatacaaac caacggataa tgagttgaat gaaatcactg 4260
gtgcttgaag gccatacctg ggaaaactgg gaaaagcttt gcgagcaaga taagcggtta 4320
cacaaggcgt tatgcaaact actcaaagaa atgcttcact cggaagatct aacctccgga 4380
ttaggtaaac ctgagccgct taagcataac ttatctggct tatggtctcg gcgcatttcg 4440
caaaaagacc gactgatata tcgctttatt ttcgctatcg gtggtcacta cgatcaacat 4500
ttagttgcca taacgccata acaagggaaa atatgaagcg cagcggaatc ttttcccttg 4560
tggttacgct tgttataagg ttgtttattc atttagactc cctctgtgtt tactgcaytg 4620
tgtggtagcc agtccagtcc acgtttttg kgggcsrwtt tcaatgtgct tgttatacac 4680
ttagatgtcc gaaaakgraa mccamccmcc attgtatatt tyttttaact caatggataa 4740
atgttttata gctaactgtg aagcttcgat tgcctgattg aactcacgat cattttttctc 4800
tgatttttca taaaaggcgt taggtgaaaa tgaagctggt tctgattttt tatgtacagc 4860
tttattcctg aatctaatta aaactttcat atattgatat gcttgctttg atttatcaat 4920
ttcttttcca gtaataattc gtgtgcaaac tagccattta gaaataatat ctaatttatc 4980
taagtgctca acaaccgtat ttgtcagaca aaatgacgag cagaaaaatc wtagactgta 5040
tattcttaaa tacwtagagg acaattwtcm cacaaaagat wtcttgcctc cactgaggct 5100
atttctttyt tgkaatcttt atccctaata ttttcccagc ttagtgacca ataatttata 5160
tcatwmaggt actctgtaag ccgataatac cttttgctta tatcccaata attgggacca 5220
```

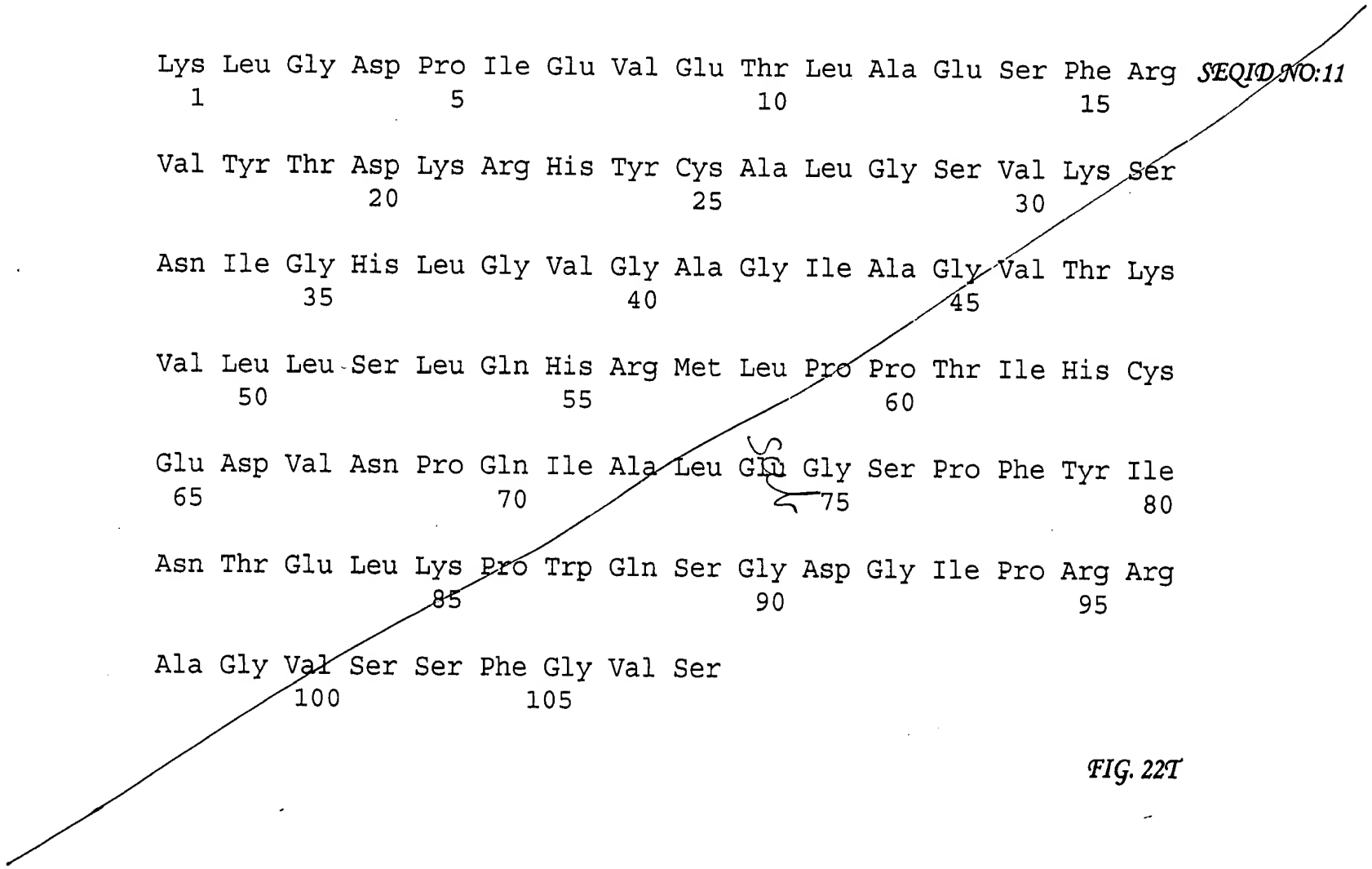
FIG. 22S (cont'd)

aaaaaagtgc aaaagcgtgg gcgcagatcg agaaatttat tccgttgygg aatagactat 5280
ttgcatcaat tactgctcaa wgccgctgaa aatttctgca aattggtaag ggctttacgt 5340
gttttgtctt gtacawagct gttctattca gcaggagaca aacatggatt agcaagtatg 5400
ggtgtagtta tcactkaaag aaatcattgg cagtatagtc aactcattga aagtcctata 5460
ttaacgtcgc cgaaagttaa atagttttta cgatgagatg taggcattgt gataaatgtg 5520
ctgcacatca tcacaatcat tcagcatatc cataaacctc tcgaacatct taacatcatc 5580
tcccgtcact ggagttgttg tttgaggaat aaattggatt tcgtcgacat crractgaag 5640
cttttcaaag gcttcagata acgcttgctt ggccttaaaa tattcagtat gaggaaccag 5700
tacgctgatc ttaccgtttt ttgcttcaat atcggtgaca tccacatttt ccatcattaa 5760
tgtctccaat acgacttctt cgtcatttcc agtgaaaaca aggattgcac aatgattaaa 5820
catatggcta acactgcctt gggtaccaat cttgcttttg gttttggtaa aacaaatacg 5880
cacatcaccg aaggtgcgat tggggttatc cgttaaacaa tcaakaawam ccatamagtt 5940
cccnaggtcc caaaaccttc ataacggagt gscaawaaag tyttcccmcc mcgcsccccc 6000
tttagctttg tytagggcct tttgaaataa cgtgggcttg gaancttggt tttttttgc 6060
tttatctatc catactgcgt agagcaagat taccttctgg atcactcccc ccntgatttt 6120
gcacagacat aaattgcgcg accatatttg ctgtagactt tggctttggc atcggaggtt 6180
ttagccattg attctttgcg gttctgatag gctcgaccca ttatataacc cctgattttt 6240
attgaacgaa gagtggattt tacaggtaac tatgagtatg gggaacctgc taatagtmmw 6300
ckwttgtccm wtatymarra ttgcyggtgg ttgtygcttc tgamtaaagc ctcaatattt 6360
gatagattca ctgaatcatt atcattaatg ggtttgataa gtatttataa gaggtttgcg 6420
gtatgatgca gtttgtaatt acctcctccc ccataataat aatgtactgt aaggaaactc 6480
aatgtcttac gattatgatt tgtttgtgat tggtgccggt tctggtggtg tgcgtgcgag 6540
tcgtattgca gcaggccttg gcgctaaagt cgcggtagct gaggatctct ttcttggtgg 6600
tacttgtgtt aatgttggtt gtgtaccaaa aaagcttttg gttctatggg tcacmttttt 6660
ytgaagagtt traascagcc gcaggttttg gttggacaat agggtcatcg tcttttcatt 6720
ggccamcatt acgtgacaat aaracaaaag aaatcgagcg tcttaatggc ggtttatcaa 6780
aacctcttag aaaagtgcgg gagtcgatat tattaatggg cggggcgacc attattgatc 6840
ctcatacgat agcagttggg gacagacagt tttactgctg aacgtatttt agttgctggc 6900
ctgccattcc tgatattcca gggagagaac atattatcag ttnctaacga agtgkkttwt 6960

FIG. 22S (cont'd)

```
ckgraagmsk wwmckaaaws srwwgctgtc gtagggggtg gctatattgc tgttgagttt 7020
gcaggtattt ttcaagggtt gggtagtgac attcatttat tgtatcgagg tgatttattt 7080
ctaaggggat ttgatcgaga tgttcgtgaa tttactgcca gtgagatgat aaagaaagga 7140
gtaaatttac attttaatcg cagtgtttct gctattgaaa agcaagtgga tggtagccta 7200
ttagtgggat taactgatgg ctcaaccttg gaagtggata ctattatgta tgccacaggt 7260
ygaaaaccar rmmyygaggs wyytggktyt ksawwrkrsc gctgtmaaas krrckyaaaw 7320
gggaagcctt tycaagtnta actgakaayt tttcaaanca agcagaagcc wbtytawttt 7380
aygcaagtwa ggggawtgtt aatagaccgg tatgncaatk aacvccaagt tgstctsggc 7440
tgaarggtat ggmcttaagc mcagctttta tattagtgac tmcagtggat taataanggt 7500
agattatggg ttttsgttgc cmagaaccgg tttttnttgc caamcccaan tatgggcacc 7560
gtaggttata gtgaagagcg ggccaagrgm wragtttgat acggtgbctg tttadaaatr 7620
gatttttaaa ccagatgaag ncatacgctg agtgncttct tngatngagc ggacttttg 7680
tgaagtnwat tagtagancc aaaacnmcag ataragtcat aggttgtcat atggtaggcg 7740
ctcracgcgg gagaaatctt gntattgcca taaaggcagg agccaccaaa gcagactttg 7800
atagcaccat aggtattcac cctacggttg ccgaagagtt tgtgactatg agagagcctg 7860
cgtatatatt atagcaatag gccaagggca gctacttgtt ttagtaaggc tatttttaca 7920
aatagtacca tcagataata taktgcggta gtttacgttc yamtgaatca kcagtkgtma 7980
wakkagtcat atagcaygms gwrtkatasg kgkattcata yyrtrcawaa syaaykckgt 8040
cgtcgaggga yataatkctc akrataatat wcrttcgasw cctgtysakk cccwaccacr 8100
satacywssc aaagarttgy agtratcrag ckwtgsakws tgamcgntgs matnakgttc 8160
aacgcatgkc ccagcctkat agcatcygac caytsagggc caawrkgmgt taaycccagt 8220
gtwcngttns atrnrsgacs mgktaatggt mggtgwttst wrkawgccsg mtcttmmaaa 8280
mcmsanngmr acgtacaagm rtgwcaccmg krkgcytrya snmattmgct atcamrcnca 8340
yssrrgggkk ggycttmawa ararggcaa aaaaaaaaan 8380
```

FIG. 22S (cont'd)



SEQID NO:11

FIG. 22T

```
Lys Leu Gly Asp Pro Ile Glu Val Glu Thr Leu Ala Glu Ser Phe Arg
 1               5                  10                  15

Val Tyr Thr Asp Lys Arg His Tyr Cys Ala Leu Gly Ser Val Lys Ser
            20                  25                  30

Asn Ile Gly His Leu Gly Val Gly Ala Gly Ile Ala Gly Val Thr Lys
        35                  40                  45

Val Leu Leu Ser Leu Gln His Arg Met Leu Pro Pro Thr Ile His Cys
    50                  55                  60

Glu Asp Val Asn Pro Gln Ile Ala Leu Glu Gly Ser Pro Phe Tyr Ile
65                  70                  75                  80

Asn Thr Glu Leu Lys Pro Trp Gln Ser Gly Asp Gly Ile Pro Arg Arg
                85                  90                  95

Ala Gly Val Ser Ser Phe Gly Val Ser Gly Thr Asn Ala His Leu Val
            100                 105                 110

Leu Glu Glu Tyr Thr His Arg Val Thr Ser Pro Leu Gln Asn Thr Ile
        115                 120                 125

Leu Pro Gln Asn Gly Leu Phe Ile Val Pro Leu Ser Ala Lys Asn Asp
    130                 135                 140
```

SEQID NO:12

FIG. 22U

```
Glu Cys Leu Asn Ala Cys Val Glu Arg Leu Leu Phe Phe Leu Lys Ser
145                 150                 155                 160

Arg Gln Ser Asp Thr Tyr Lys Lys Tyr Ser Leu Ser Asp Thr Ala Pro
                165                 170                 175

Ile Leu Leu Asp Leu Ala Tyr Thr Leu Gln Val Ser Arg Glu Ala Met
            180                 185                 190

Thr Lys Arg Val Ala Phe Val Val Lys Thr Thr Ile Glu Leu Met Glu
        195                 200                 205

Lys Leu Asn Ala Phe Ile Glu Lys Gln Asn Thr Ile Lys Ala Ser Asn
    210                 215                 220

Ile Lys Gly Cys Tyr Tyr Ser Ser Thr Lys Thr Ser Ser Pro Phe Asp
225                 230                 235                 240

Asn Glu Ser Thr Asp
                245
```

FIG. 22U (cont'd)

```
Arg Leu Gly Asp Pro Ile Glu Leu Ala Ala Leu Ser Lys Ala Phe Glu
 1               5                  10                  15

Glu Gly Thr Gln Arg Lys Gln Phe Cys Gly Ile Gly Ser Val Lys Ser
            20                  25                  30

Asn Ile Gly His Leu Asp Val Ala Ala Gly Val Val Gly Leu Ile Lys
        35                  40                  45

Thr Ala Leu Ser Leu Gln His Arg Leu Leu Pro Pro Thr Ile Asn Tyr
    50                  55                  60

Glu Ala Pro Asn Arg Glu Ile Asn Phe Glu Gln Ser Pro Phe His Val
65                  70                  75                  80

Ile Asp Glu Leu Thr Glu Trp Arg Gly Gln Gly Gly Pro Leu Arg Ala
                85                  90                  95

Gly Val Ser Ser Phe Gly Ile Gly
            100
```

SEQID NO:14

FIG. 22V

```
Gln Leu Gly Asp Pro Ile Glu Leu Gln Ala Leu Ala Asp Val Tyr Arg
 1               5                  10                  15

Val Asp Asn Trp Arg Lys Asn Thr Cys Ala Leu Gly Ser Val Lys Ser
            20                  25                  30

Asn Ile Gly His Thr Ser Ala Ala Ser Gly Val Ala Gly Ile His Lys
        35                  40                  45

Val Leu Leu Ser Leu Lys His Arg Gln Leu Val Ala Ser Leu His Phe
    50                  55                  60

Asn Ser Ala Asn His His Phe Asp Phe Gln Gln Ser Pro Phe Tyr Val
65                  70                  75                  80

Asn Thr Gln Leu Arg Pro Trp Asp Gln Ala Glu Gly Leu Glu Glu Ser
                85                  90                  95

Arg Arg Arg Ala Ala Val Ser Ser Phe Gly Val Ser
        100             105
```

SEQID NO:16

FIG. 22W

```
Glu Tyr Gly Asp Pro Met Glu Leu Thr Ala Ala Ala Ala Val Phe Gly
 1               5                  10                  15

Arg Gly Arg Asn Gln Lys Asn Arg Leu Leu Val Gly Ser Val Lys Ala
            20                  25                  30

Asn Ile Ser His Leu Glu Ala Ala Gly Gly Ile Ser Gly Leu Ile Lys
        35                  40                  45

Ala Val Leu Ala Met Gln His Gly Val Ile Pro Gln Gln Leu His Cys
    50                  55                  60

Lys Glu Pro Ser Pro His Ile Pro Trp Lys Arg Leu Pro Leu Asp Leu
65                  70                  75                  80

Val Gln Glu Gln Thr Val Trp Pro Glu Ser Glu Glu Arg Ile Ala Ala
                85                  90                  95

Val Thr Ala Ser Asp
            100
```

SEQID NO:18

FIG. 22X

```
Gln Leu Gly Asp Glu Ile Glu Val Arg Ala Leu Ser Lys Val Tyr Gly
 1               5                  10                  15

Asp Ser Gln Ser Thr Thr Tyr Leu Gly Ala Val Lys Ser Asn Ile Gly
            20                  25                  30

His Ala Asn Ala Gly Ala Gly Ile Ala Gly Phe Ile Lys Thr Val Leu
        35                  40                  45

Ser Leu Tyr His Gly Lys Ile Ala Pro Asn Ala Gly Asn Thr Glu Pro
    50                  55                  60

Asn Ala Ala Leu Asn Leu Asp Ala Phe His Phe Ala Leu Pro Lys Thr
65                  70                  75                  80

Leu Leu Thr Trp Pro Glu Cys Asp Val Arg Arg Ala Ala Ile Ser Ser
                85                  90                  95

Leu Gly Phe Gly
            100
```

SEQID NO:20

FIG. 22Y

```
Ala Leu Gly Asp Pro Ile Glu Phe Gly Ala Ile Lys Ala Val Tyr Gly
 1               5                  10                  15

Pro Gly Arg Ser Ser Pro Leu Val Leu Gly Ala Leu Lys Ser Asn Ile
            20                  25                  30

Gly His Leu Glu Ala Thr Ala Gly Val Ala Ala Leu Ile Lys Ala Val
        35                  40                  45

Leu Val Leu Gln His Gly Val Ala Pro Ala Asn Leu His Cys His Lys
    50                  55                  60

Leu Asn Pro Leu Leu Asp Ile Asp Gly Phe Asn Val Val Phe Pro Gln
65                  70                  75                  80

Ser Glu Thr Pro Leu His Ser Ser Leu Gln Leu Leu Gly Gly Tyr Gln
                85                  90                  95

Phe Val Arg Val Trp
            100
```

SEQID NO:22

FIG. 22Z

```
Thr Trp Xaa Ser Leu Leu Arg Trp Gly Leu Leu Gln Asn His Phe Asp
 1               5                  10                  15

Pro Tyr Thr Glu Lys Lys Asn Tyr Cys Ala Ser Gly Ser Val Lys Ser
            20                  25                  30

Asn Ile Gly His Leu Thr Ala Ala Gly Val Ser Gly Val Val Lys Val
        35                  40                  45

Leu Leu Ala Leu Lys His Lys Gln Leu Pro Pro Ser Cys His Leu Val
    50                  55                  60

Lys Ile Asn Glu His Ile Asn Leu Glu Asp Ser Pro Phe Tyr Ile Asn
65                  70                  75                  80

Thr Ala Leu Lys Lys Trp Glu Val Ser Glu Gly Glu Ala Arg Arg Ala
                85                  90                  95

Ala Val Ser Ser Phe Gly Ser
            100
```

SEQ ID NO:24

FIG. 22AA

```
Pro Leu Gly Asp Pro Ile Glu Met Ala Ala Leu Lys Gln Ala Phe Gly
 1               5                  10                  15

Thr Gln Lys Lys Lys Tyr Cys Ala Ile Gly Ser Val Lys Ser Asn Ile
            20                  25                  30

Gly His Ala Asp Thr Ala Ala Gly Val Ala Gly Leu Ile Lys Thr Val
        35                  40                  45

Met Ala Leu Lys Ala Arg Gln Ile Pro Pro Ser Leu His Phe Glu Thr
    50                  55                  60

Pro Asn Pro Gln Ile Asp Phe Ala Asp Ser Pro Phe Tyr Val Asn Thr
65                  70                  75                  80

Thr Leu Lys Asp Trp Asn Thr Asn Gly Val Pro Arg Arg Ala Gly Val
                85                  90                  95

Ser Ser Phe Gly Ile Gly
            100
```

SEQID NO:24

FIG. 22BB

SEQ ID NO:28

```
Val Val Gly Asp Pro Ile Glu Val Val Gly Leu Thr Lys Ala Tyr Gln
 1               5                  10                  15

Ala His Thr Gln Glu Arg Gln Tyr Cys Gly Leu Gly Ser Val Lys Thr
            20                  25                  30

Asn Ile Gly His Thr Asp Ser Ala Ala Gly Ile Ala Gly Leu Leu Lys
        35                  40                  45

Ile Val Met Ala Met Lys His Arg Gln Leu Pro Pro Ser Leu Asn Phe
    50                  55                  60

Glu Thr Pro Asn Pro Asp Leu Asp Leu Glu Asn Ser Pro Phe Phe Ile
65                  70                  75                  80

Gln Thr Lys Leu Lys Asp Trp Glu Ser Val Gly Pro Arg Arg Ala Ala
                85                  90                  95

Leu Ser Ser Phe Gly Leu Gly
            100
```

FIG. 22CC

```
Met Val Val Val Glu Glu Phe Phe Val Ser Tyr Arg Asp Ile Leu Lys
 1               5                  10                  15

Ala Leu Gln Asp Glu Lys Ile Ser Phe Glu Glu Ala Lys Tyr Lys Leu
            20                  25                  30

Ile Lys Arg Lys Asp Lys Lys Ser Lys Gln Arg Leu Asn His Asp Arg
        35                  40                  45

Glu Leu Asn Arg Ser Met Asn Ile Thr Pro Lys Ile Val Asn Asn Tyr
    50                  55                  60

Gly Leu Val Leu Leu Gly Gly His Leu Phe Glu Glu Leu Arg Leu Ser
65                  70                  75                  80

Glu Trp Lys Ala Ala Asn Pro Asn Pro Asn Glu Val Ser Ile Gln Val
                85                  90                  95

Lys Ala Ser Ala Ile Ser Phe Thr Asp Thr Leu Cys Val Gln Gly Leu
            100                 105                 110

Tyr Pro Ser His Tyr Pro Phe Val Pro Gly Phe Glu Val Ser Gly Val
        115                 120                 125

Ile Arg Gln Val Gly Glu His Ile Thr Asp Leu His Val Gly Asp Glu
    130                 135                 140
```

SEQID NO:38

FIG. 22DD

```
Val Ile Ala Phe Thr Gly Ser Ser Met Gly Gly His Ala Ala Tyr Val
145                 150                 155                 160

Thr Val Pro Gln Asp Tyr Val Val Arg Lys Pro Lys Asp Leu Ser Phe
                165                 170                 175

Glu Asp Ala Cys Ser Phe Pro Leu Ala Phe Ala Thr Val Tyr His Ser
            180                 185                 190

Phe Ala Arg Gly Lys Leu Ser His Asn Asp His Ile Leu Ile Gln Thr
        195                 200                 205

Ala Thr Gly Gly Cys Gly Leu Met Ala Leu Gln Leu Ala Arg Leu Lys
    210                 215                 220

Gln Cys Val Cys Tyr Gly Thr Ser Ser Arg Glu Asp Lys Leu Ala Leu
225                 230                 235                 240

Leu Lys Gln Trp Ala Leu Pro Tyr Val Phe Asn Tyr Lys Thr Cys Asn
                245                 250                 255

Ile Asp Glu Glu Ile Gln Arg Val Ser Gly His Arg Gly Val Asp Val
            260                 265                 270

Val Leu Asn Met Leu Pro Gly Glu His Ile Gln Gln Gly Leu Asn Ser
        275                 280                 285
```

FIG. 22DD (cont'd)

```
Leu Ala Lys Gly Gly Arg Tyr Leu Glu Leu Ser Met His Gly Leu Leu
    290                 295                 300

Thr Asn Glu Pro Val Ser Leu Ser Ser Leu Arg Phe Asn Gln Ser Val
305                 310                 315                 320

Gln Thr Ile Asn Leu Leu Gly Leu Leu Asn Lys Gly Asp Asp Gly Phe
                325                 330                 335

Ile Gly Ser Val Leu Ala Gln Met Val Ser Trp Ile Glu Ser Gly Asp
            340                 345                 350

Leu Val Ser Thr Val Ser Arg Ile Tyr Pro Leu Asp Gln Ile Gly Glu
        355                 360                 365

Ala Leu Arg Tyr Val Ser Glu Gly Glu His Ile Gly Lys Val Val Val
    370                 375                 380

Ser His Thr Ala Thr Glu Pro Met Asp Cys Arg Gln Arg Cys Ile Asp
385                 390                 395                 400

Asn Val Leu Lys Gln Gly Gln Met Ala Ala Leu Thr Ala Thr Gly Gly
                405                 410                 415

Lys Ser Arg Val Trp Gly Gly Thr Gly Val Asn Asp Lys Pro Ser Pro
            420                 425                 430
```

FIG. 22DD (cont'd)

```
Ala Val Gly Ile Glu Glu Arg Leu Leu Glu Gly Ile Ala Val Ile Gly
        435                 440                 445

Leu Ser Gly Gln Tyr Pro Lys Ser Lys Thr Leu Glu Gln Phe Trp Gln
    450                 455                 460

Thr Leu Ala Asp Gly Val Asp Cys Ile Ser Glu Ile Pro Ala Asp Arg
465                 470                 475                 480

Trp Ser Leu Glu Glu Tyr Tyr Ser Pro Ile Pro Glu Gly Gly Lys Thr
                485                 490                 495

Tyr Cys Lys Trp Met Gly Val Leu Glu Asp Met Asp Cys Phe Asp Pro
            500                 505                 510

Leu Phe Phe Ala Ile Ser Pro Arg Glu Ala Glu Val Met Asp Pro Gln
        515                 520                 525

Gln Arg Leu Phe Leu Glu Asn Ala Trp Ser Cys Ile Glu Asp Ala Gly
    530                 535                 540

Ile Asn Pro Lys Met Leu Ser Arg Ser Arg Cys Gly Val Phe Val Gly
545                 550                 555                 560

Cys Gly Ala Asn Asp Tyr Ser Ala Leu Met Asn Ser Ser His Ser Thr
                565                 570                 575
```

FIG. 22DD (cont'd)

```
Ser Leu Glu Leu Met Lys Glu Leu Gly Asn Asn Ser Ser Ile Leu Ser
            580                 585                 590

Ala Arg Ile Ser Tyr Phe Leu Asn Leu Lys Gly Pro Cys Leu Ala Ile
        595                 600                 605

Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Ile Ala Glu Ser Cys Asn
    610                 615                 620

Ser Leu Val Leu Gly Thr Ser Asp Leu Ala Leu Ala Gly Gly Val Leu
625                 630                 635                 640

Leu Met Pro Gly Pro Ser Leu His Ile Gly Leu Ser His Gly Glu Met
                645                 650                 655

Leu Ser Val Asp Gly Arg Cys Phe Thr Phe Asp Gln Arg Ala Asn Gly
            660                 665                 670

Phe Val Pro Gly Glu Gly Val Gly Val Val Leu Leu Lys Arg Met Ser
        675                 680                 685

Asp Ala Val Arg Asp Gly Asp Pro Ile Arg Ala Val Ile Arg Gly Trp
    690                 695                 700

Gly Val Asn Gln Asp Gly Arg Ser Asn Gly Ile Thr Ala Pro Ser Ser
705                 710                 715                 720
```

FIG. 22DD (cont'd)

```
Lys Ala Gln Ser Ala Leu Glu Gln Glu Val Tyr Gln Arg Phe Asn Ile
                725                 730                 735

Asp Pro Ser Ser Ile Thr Leu Val Glu Ala His Gly Thr Gly Thr Lys
            740                 745                 750

Leu Gly Asp Pro Ile Glu Val Glu Ala Leu Ala Glu Ser Phe Arg Val
        755                 760                 765

Tyr Thr Asp Lys Arg His Tyr Cys Ala Leu Gly Ser Val Lys Ser Asn
    770                 775                 780

Ile Gly His Leu Gly Val Gly Ala Gly Ile Ala Gly Val Thr Lys Val
785                 790                 795                 800

Leu Leu Ser Leu Gln His Arg Met Leu Pro Pro Thr Ile His Cys Glu
                805                 810                 815

Asp Val Asn Pro Gln Ile Ala Leu Glu Gly Ser Pro Phe Tyr Ile Asn
            820                 825                 830

Thr Glu Leu Lys Pro Trp Gln Ser Gly Asp Ser Ile Pro Arg Arg Ala
        835                 840                 845

Gly Val Ser Ser Phe Gly Phe Ser Gly Thr Asn Ala His Leu Val Leu
    850                 855                 860
```

FIG. 22DD (cont'd)

```
Glu Glu Tyr Leu Pro His Ser Thr Gly Thr Ile Glu Ser Phe Ala Ala
865                 870                 875                 880

Asn His Ala Ser Thr Val Ile Ile Pro Leu Ser Ala Lys Ser His Asn
                885                 890                 895

Ser Leu Tyr Thr Tyr Ala Gln Thr Leu Leu Ile Phe Leu Lys Arg Ser
            900                 905                 910

Gln Val Thr Asp Ala Lys Lys Ile Thr Ile Asp His Met Glu Cys Arg
        915                 920                 925

Leu Leu Asp Leu Ala Tyr Thr Leu Gln Val Gly Arg Glu Ala Met Asp
    930                 935                 940

Lys Arg Ile Ser Phe Ile Val Asn Thr Lys Gln Ala Leu Val Glu Lys
945                 950                 955                 960

Leu Asn Ala Phe Leu Glu Lys Glu Lys Thr Ile Thr Asp Cys Tyr His
                965                 970                 975

Tyr Leu Phe Asp Ser Asp Lys Pro Ser Thr Glu Ile Phe Arg Leu Asp
            980                 985                 990

Glu Asp Asp Lys Val Leu Ile Asn Ser Trp Ile Ser Gln Ser Gln Tyr
        995                1000                1005
```

FIG. 22DD (cont'd)

```
His Lys Leu Ala Glu Ala Trp Ser Gln Gly Leu Asp Ile Asp Trp Thr
   1010                1015                1020

Leu Leu Tyr Thr His Ser Ser Thr Pro Arg Arg Ile Ser Leu Pro Thr
1025                1030                1035                1040

Tyr Pro Phe Ala Arg Asp Arg Tyr Trp Leu Pro Glu Lys Pro Arg Tyr
                1045                1050                1055

Asn Ala Ala Asn His Pro Val Ser Asn His Gln Thr Thr Thr Gln Asn
           1060                1065                1070

His Ser Arg Phe Ala Ile Asp Thr Asp His Asp Val Val Ala Glu Ile
       1075                1080                1085

Met Gln Lys Thr His Gln Gln Glu Leu Glu Gln Trp Leu Leu Lys Leu
   1090                1095                1100

Leu Phe Val Gln Leu Gln His Met Gly Leu Phe Gln His Arg Val Phe
1105                1110                1115                1120

Glu Thr Ala Thr Ala Leu Arg Gln Ser Ala Gly Ile Val Asp Lys Tyr
                1125                1130                1135

Asp Arg Trp Trp His Glu Cys Leu Ser Val Leu Gln Asp Ala Gly Tyr
           1140                1145                1150
```

FIG. 22DD (cont'd)

```
Leu Glu Trp Lys Asp Asp Ser Val Ala Ala Ala Gln Ala Leu Glu Ser
       1155                1160                1165

Glu Ser Gln Glu Ala Trp Trp Ser Arg Trp Asn Thr Glu Tyr Lys His
   1170                1175                1180

Tyr Gln Asn Asp Pro Glu Lys Lys Thr Leu Ala Ile Leu Ile Asn Asp
1185                1190                1195                1200

Cys Leu Gln Ala Leu Pro Gly Val Leu Ser Gly Glu Gln Leu Ile Thr
                1205                1210                1215

Asp Ile Ile Phe Pro Asn Gly Ser Met Glu Lys Met Glu Gly Leu Tyr
            1220                1225                1230

Lys Asn Asn Arg Ile Ala Asp Tyr Cys Asn Gln Cys Val Gly Asp Leu
       1235                1240                1245

Leu Val Gln Phe Ile Glu Ala Arg Leu Ser Arg Asp Ala Asn Ala Arg
   1250                1255                1260

Ile Arg Ile Ile Glu Ile Gly Ala Gly Thr Gly Gly Thr Thr Ala Ile
1265                1270                1275                1280

Val Leu Pro Met Leu Gln Ala Tyr Gln Asp His Ile Asp Thr Tyr Cys
                1285                1290                1295
```

FIG. 22DD (cont'd)

```
Tyr Thr Asp Val Ser Lys Ala Phe Leu Met His Gly Gln Glu His Tyr
          1300                1305                1310

Gly Glu Gln Tyr Pro Tyr Leu Ser Tyr Cys Leu Cys Asn Ile Glu Gln
       1315                1320                1325

Asp Leu Val Ala Gln Gly Ile Ser Val Gly Asp Tyr Asp Ile Ala Ile
   1330                1335                1340

Ala Ala Asn Val Leu His Ala Thr Arg Asn Ile His Glu Thr Val Ser
1345                1350                1355                1360

His Val Arg Gln Ala Leu Ala Ala Asn Gly Leu Leu Ile Leu Asn Glu
               1365                1370                1375

Phe Ser Gln Lys Ser Val Phe Ser Ser Val Ile Phe Gly Leu Ile Asp
          1380                1385                1390

Gly Trp Ala Leu Ser Glu Asp Thr Gly Leu Arg Ile Pro Gly Ser Pro
       1395                1400                1405

Gly Leu Tyr Pro Lys Gln Trp Gln Ala Val Leu Glu Ala Ser Gly Phe
   1410                1415                1420

Gly Asp Val Glu Phe Pro Leu His Asp Ala Arg Glu Leu Gly Gln Gln
1425                1430                1435                1440
```

FIG. 22DD (cont'd)

Ile Ile Leu Ala Thr Asn Ala His Ala Asn Val Ala Ser Asp Leu Ala
1445 1450 1455

Thr Ser Val Ile Asp His Ala Pro Lys Arg Leu Pro Ser Ala Glu Val
1460 1465 1470

Ser Met Asp Glu Arg Val Ser His Asp Ala Met Met Lys Ala Ser Val
1475 1480 1485

Lys Gln Leu Leu Val Glu Gln Leu Ser Gln Ser Leu Lys Leu Asp Met
1490 1495 1500

Asn Glu Ile His Pro Asp Glu Ser Phe Ala Asp Tyr Gly Val Asp Ser
1505 1510 1515 1520

Ile Thr Gly Ala Ser Phe Ile Gln Gln Leu Asn Asp Thr Leu Thr Leu
1525 1530 1535

Thr Leu Lys Thr Val Cys Leu Phe Asp His Ser Ser Val Asn Arg Leu
1540 1545 1550

Thr Ala Tyr Leu Leu Ser Asp Tyr Gly Asp Asp Ile Ala Gln Trp Leu
1555 1560 1565

Ala Thr Ala Pro Ala Leu Val Asp His Pro Gln Ser Val Val Ser Gln
1570 1575 1580

FIG. 22DD (cont'd)

```
Val Leu Pro Glu Arg Ser Pro Ala Ser Thr Gln Ala Lys Pro Leu Pro
1585                1590                1595                1600

Ser Val Pro Pro Ser Leu Ser Met Glu Ser Pro Val Gln Gln Glu Ser
                1605                1610                1615

Ile Ala Ile Ile Gly Met Ser Gly Arg Phe Ala Ala Ser Glu Asn Leu
            1620                1625                1630

Glu Ala Phe Trp Gln Gln Leu Ala Gln Gly Val Asp Leu Val Glu Pro
        1635                1640                1645

Ala Ser Arg Trp Gly Pro Gln Ala Glu Thr Tyr Tyr Gly Ser Phe Leu
    1650                1655                1660

Lys Asp Met Asp Gln Phe Asp Pro Leu Phe Phe Asn Leu Ser Gly Val
1665                1670                1675                1680

Glu Ala Ser Tyr Met Asp Pro Gln Gln Arg Cys Phe Leu Glu Glu Ser
                1685                1690                1695

Trp Asn Ala Leu Glu Asn Ala Gly Tyr Val Gly Asp Gly Ile Glu Gly
            1700                1705                1710

Lys Arg Cys Gly Ile Tyr Ala Gly Cys Val Ser Gly Asp Tyr Ala Gln
        1715                1720                1725
```

FIG. 22 DD (cont'd)

```
Leu Leu Gly Asp Gln Pro Pro Pro Gln Ala Phe Trp Gly Asn Ala Ser
   1730                1735                1740

Ser Ile Ile Pro Ala Arg Ile Ala Tyr Tyr Leu Asn Leu Gln Gly Pro
1745                1750                1755                1760

Ala Thr Ala Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Val His
               1765                1770                1775

Leu Ala Cys Gln Ala Leu His Leu Asp Glu Met Glu Met Ala Leu Ala
           1780                1785                1790

Gly Gly Val Ser Leu Tyr Pro Thr Pro Ile Ile Val Glx Val Phe Ala
       1795                1800                1805

Trp Cys Arg Tyr
   1810
```

FIG. 22DD (cont'd)